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INTERRELATIONSHIP OF FUNCTION OF THE THYROID GLAND

AND OF ITS ACTIVE AGENT, THYROXIN, IN THE TISSUES OF THE BODY *

HENRY S. PLUMMER, M.D.

ROCHESTER, MINN.

The highly essential function of the thyroid is the elaboration and delivery to the body of thyroxin. The gland secretes and stores in its acini the so-called colloid. It seems highly probable that the latter function is an accessory to the production and storage of thyroxin, and that in it is stored iodin for the elaboration of this agent. There is no definite evidence that the thyroid has any other function.

THYROXIN

In 1914 Kendall separated from the thyroid gland the pure chemical compound thyroxin. He proved thyroxin to be its active agent. In 1915, in attempting to correlate the available data with regard to the function of the thyroid gland and of its active agent, thyroxin, in the tissues of the body, I formulated these deductions:

1. Thyroxin is active directly or indirectly in the cells throughout the tissues of the body.
2. Thyroxin is an agent hastening the rate of formation of a quantum of potential energy available for transformation on excitation of the cell.
3. Hyperthyroidism is the physiologic status of an individual otherwise normal when the thyroxin in the tissues is sufficient to hold the basal metabolism above normal.
4. Hypothyroidism is the opposite of hyperthyroidism.
5. All the phenomena in pure hyperthyroidism are those that must attend a sustained elevation of the basal metabolism.
6. The status of the hyperfunctionating adenomatous goiter is the result of a pure hyperthyroidism.
7. The status of exophthalmic goiter is not accounted for by a pure hyperthyroidism.

Various observations correlated on these working hypotheses led me, in 1917, without previous estimates of the basal metabolism following the administration of thyroxin, to give intravenously to a myxedematous patient, supposedly having no thyroid gland, 22 mg. of thyroxin and to anticipate the reaction which followed. The reaction was approximately the average of those obtained from several hundred doses since administered. From these studies the following deductions may be drawn:

1. After the administration of a single dose of thyroxin sufficient to bring the basal metabolism to normal, the physiologic status of a thyroidless patient becomes normal in from ten to twelve days, remains approximately normal for ten days, and returns to the preexisting status in from five to seven weeks.
2. The amount of thyroxin in the tissues (exclusive of the thyroid) of the average normal man is approximately 14 mg. Kendall, from an analysis of the iodin content in the tissues, recently estimated the amount to be 14 mg.
3. The average daily exhaustion of thyroxin in the tissues is between 0.50 and 1 mg.
4. A shift of 1 mg. of thyroxin in the tissues of the body is accompanied by a corresponding rise or fall of between 2 and 3 per cent. in the basal metabolism.
5. Fourteen milligrams of thyroxin given to a thyroidless person is not fully exhausted until from the end of the fifth to the eighth week.

Two milligrams of thyroxin a day may hold the basal metabolism from 20 to 30 per cent. above normal; 3 mg. a day may hold the basal metabolism 50 per cent. above normal.

Fifteen milligrams of thyroxin given intravenously to patients with exophthalmic goiter who have a basal metabolism above + 65 may not cause notable reaction; when given to patients having large colloid goiter with bruit, the bruit disappears and the thyroid shrinks rapidly, but constitutional reaction may be absent. With these two exceptions a sustained elevation of the basal metabolism has followed every intravenous dose of more than 1 mg. of thyroxin.

The drop in the basal metabolism following the traumatic destruction of the entire thyroid, its resection for hyperfunctioning adenomatous goiter, the administration of a large dose of thyroxin or the withdrawal of this agent after a period of daily administration is always gradual, extending over days. These observations indicate that the thyroid under average normal conditions maintains an approximately constant level of thyroxin in the body, and that an elevation of basal metabolism of more than 5 per cent., followed within twenty-four hours by a corresponding drop, cannot, except possibly in relatively high degrees of hyperthyroidism, be attributed to fluctuation in the thyroxin content of the body.

Without knowing the exact mechanism of the normal stimulation of the thyroid we can assume that it is brought into play by a drop in the amount of thyroxin in the tissues of the body. This being true, the daily administration of 1 mg. or more of thyroxin should place the thyroid at partial or complete rest, at least so far as the production of this agent is concerned. Following this hypothesis, the daily administration of from 0.5 to 1 mg. of thyroxin to a normal person might not be attended by any general physiologic reaction. We have given a daily dose of 1

* Address of the chairman of the Section on Practice of Medicine, read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* This paper and those by Drs. Lusk, Benedict and Boothby which follow are a part of a symposium on "Basal Metabolism." The remaining papers, by Drs. Means and Du Bois, together with the discussion, will appear next week. After publication in THE JOURNAL, the complete symposium will be republished in pamphlet form.

mg. to a number of persons, apparently having a normal thyroid function, for months without any deflection of the basal metabolism from the normal. There are some objections to drawing definite conclusions from these results and from other observations which indicate that the thyroid gland is placed at rest by the administration of thyroxin; however, the mass of evidence supports the hypothesis.

There are approximately 10 mg. of thyroxin in 150 grams of desiccated thyroid. The physiologic reaction following the administration of thyroxin is, so far as we have made any observation, identical with that following the administration of the fresh or desiccated thyroid gland containing this agent. Absorption from the intestinal tract is, however, very erratic, and desiccated thyroid cannot be given intravenously.

A daily oral dose of 1.6 mg. of thyroxin will hold the basal metabolism of most thyroidless individuals within the normal limits. In most instances the dose established two or three years ago has not had to be changed, the basal metabolism estimates being within 5 per cent. of the average normal each time the patient has returned fr observation. A daily dose of from 2 to 3 mg. of thyroxin or 20 grams of desiccated thyroid given by mouth will not fluctuate the basal metabolism or cause any physiologic reaction in many patients in whom this dose given intravenously causes the quantitative reaction almost standard for myxedematous patients. In isolated cases, 250 grams of desiccated thyroid has not caused any reaction. This failure of absorption or destruction of thyroxin before reaching the general circulation is characteristic of a considerable percentage of patients who have diffuse colloid goiter and of patients in the various groups having low basal metabolism readings not attributable to a primary hypothyroidism. This failure of absorption, the difficulty of carrying out daily intravenous administration over a long period, the probability that the thyroid is placed at partial or complete rest, and evidence that under certain conditions the thyroid picks up and stores part of the thyroxin, have been most baffling in the attempt to study quantitatively the reactions of persons having functioning thyroids.

As thyroxin, other factors remaining constant, determines the rate of transformation of energy in the organism, it can be assumed that the rate of exhaustion of thyroxin for a given period is determined, to a large extent at least, by the total transformation of energy. That the rate of exhaustion relative to the total metabolism is not the same in all the organs or reactions of the organism is probable. There is much to suggest that the rate of exhaustion of thyroxin in the female is higher than in the male.

It seems probable that the relation of the rate of exhaustion to the total metabolism for a given period might be roughly determined by fluctuating stress on a thyroidless person whose basal metabolism has been held at normal sufficiently long to permit of readjustment of physiologic functions. We have not, up to the present, been able to control such a patient for the required time.

It is quite probable that there is a gradual adaptation downward in the thyroxin content of the tissues, and hence in the thyroid activity in some of the classifiable and unclassifiable conditions not primarily hypothyroid, with which a low basal metabolism is associated. The clearest evidence of this is the gradual adaptation downward of the basal metabolism to long continued low food intake. The term secondary hypothyroidism might, though perhaps inadvisably, be applied to such a status. That a disuse atrophy may result is possible, if not probable. Assuming that the rate of exhaustion of thyroxin in the tissues should be determined largely by the total energy transformation, and hence that disuse atrophy and inability of the thyroid to respond to a suddenly increased demand might follow a prolonged low food intake, three patients with hysterical dysphagia, who had lived and worked hard on a very limited liquid diet for a number of years, were held under observation following the sudden relief of the dysphagia and return to a normal diet. As anticipated, the basal metabolism of each patient dropped from 10 to 22 per cent. below normal in three weeks, and the edema, the skin changes, and other minor evidence of myxedema developed. This observation has added significance in the light of the following facts.

The basal metabolism of a thyroidless individual is from 30 to 40 per cent. below the average normal. The edema of myxedema develops, or at least becomes recognizable, when the basal metabolism drops from 15 to 17 per cent. below the average normal. In a myxedematous person having a basal metabolism ranging near this point, the edema may appear after stress, and disappear after rest. Sustained stress exhausts the thyroxin more rapidly than it can be produced by the thyroid and the basal metabolism drops a few points. A recognizable edema may disappear and reappear with a shift of 1 mg. or less of thyroxin in the tissues of the body. A drop in the basal metabolism to 40 per cent. below normal does not cause edema in the classifiable and unclassifiable conditions not due primarily to hypothyroidism. This relation of edema to the basal metabolism is of the highest significance in the differential diagnosis of primary hypothyroidism and of the other conditions with which a low metabolism is associated.

If we are right in the inference that the amount of thyroxin in the tissues of the body throughout the range of normal or near normal conditions is fairly constant, and that the rate of exhaustion is determined to a high degree by the total metabolism or fluctuations in specific metabolic reactions, the thyroid is subject to the greatest stimulation when the amount of this agent in the body is lowest, that is, when the tendency is toward hypothyroidism. This indicates that increased vascularity and histologic evidence of increased activity in the thyroid should not be accepted, without hesitation, as evidence of hyperthyroidization of the tissues of the body. This, of course, does not apply if the stimulus to the thyroid is not originating in the demands of the organism, as is probably true in pathologic conditions, such as exophthalmic goiter and hyperfunctioning adenomatous goiter.

The ease with which the phenomena attending an elevation of the metabolism and an increased rate of exhaustion of thyroxin in the tissues from stimulation originating in the central nervous system and the resulting evidence of stress on the thyroid may be confused with the phenomena of hyperthyroidism is apparent when we recognize that but for the transformation of part of the energy to motion, the phenomena of physical exertion and the resulting fatigue could be distinguished only with difficulty from those of pure hyperthyroidism. The phenomena of mild exophthal-

mic goiter are so much like the psychoneurotic manifestations due to lack of assurance that the thyroid is frequently resected for the latter condition. The lack of assurance is frequently cut out, and both the physician and patient satisfied; the latter enjoys a period of ease after demanding restitution of fees from previous consultants.

THYROID GLAND

The normal thyroid gland is constituted of acini containing colloid and lined with relatively dormant appearing cuboidal or low columnar epithelium supported by the sustentacular tissue common to gland structure. Various interpretations have been placed on the groups of cells in the stroma of the gland; however, they are not known to have any definite specific function peculiar to the thyroid.

Three departures from this somewhat conventional picture of the normal thyroid gland dominate the study of the relationships of the anatomic changes and functional activity of the thyroid, and form the basis for the classification of conditions grouped under the term goiter: (1) hypertrophy of the alveolar epithelium; (2) an increase of the intra-alveolar colloid, and (3) the development of new alveoli. On these changes, goiter may be primarily classified as hypertrophic, colloid and adenomatous.

Diffuse colloid goiter and diffuse hypertrophic goiter may be considered anatomic expressions of functional disturbance in prenatally developed thyroid acini. Adenomatous goiter is new tissue developing postnatally from the stimulation of embryonic cells. All these types may be present in the same gland. Adenomatous tissue may be either encapsulated or nonencapsulated.

Three clear-cut abnormal physiologic states are associated with anatomic changes in the thyroid: (1) pure hyperthyroidism; (2) pure hypothyroidism, and (3) exophthalmic goiter.

A definite syndrome of hyperthyroidism is, with rare exceptions, associated with diffuse hypertrophic or adenomatous goiter, or follows the administration of thyroxin.

The assumption that the status of adenomatous goiter is attributable simply to an excess of the normal thyroid product (pure hyperthyroidism) rests largely on a correlation of at least approximately accurate observations. They are:

1. The physiologic status of a thyroidless individual returns to normal when the basal metabolism is brought to normal by the administration of thyroxin.
2. The phenomena induced by the administration of thyroxin and the phenomena associated with adenomatous goiter are identical and are those that must attend a sustained elevation of the metabolism.
3. These phenomena disappear with the dropping of the basal metabolism to normal within three weeks after the enucleation of the adenoma.

The status of exophthalmic goiter, while in the main hyperthyroid, cannot be attributed wholly to an excess of the normal thyroid product. The characteristics of exophthalmic goiter may be due to an incomplete thyroxin molecule.

The capacity of the normal thyroid to elaborate thyroxin without notable histologic change is evidenced by the failure to demonstrate such changes after the resection of at least three fourths of the thyroid. That the thyroid is subject to the laws of rest and repose; that it stores thyroxin, iodin and colloid, and that during periods of stress it absorbs a portion of the colloid, utilizes the stored iodin, and delivers thyroxin to the blood stream; that hyperthrophy is indicative of a relatively high degree of stimulation; that intensive stimulation will cause hypertrophy and hyperfunction; and that the intracellular changes are indicative of the secretory processes of the thyroid vesicles functioning under normal conditions can be accepted with little, if any, reserve. However, several themes that pervade, if they do not dominate, the literature on the thyroid gland are open to question: (1) Hypertrophy is indicative of the production of the active agent of the thyroid in excess of the average normal; (2) the storage of colloid in excess of the normal is indicative of a resting phase of the thyroid and is a result of damage from preexisting hypertrophy and the thyroid at rest.
hyperplasia, and (3) the administration of iodin places

For evident reasons we might anticipate that the administration of thyroxin to the point of supplying the demands of the organism would place the thyroid at rest and that the administration of iodin, if the supply of this element were otherwise deficient, would favor thyroid productivity.

Areas of hypertrophy, "some hypertrophy" (MacCarty), are present in such a percentage of all thyroids resected that this degree of hypertrophy has little, if any, tangible significance. In exophthalmic goiter, diffuse hyperthrophy of the thyroid is rarely absent, but even in severe cases it varies from the most marked degree to the vanishing point. Diffuse hypertrophy unassociated with a syndrome that is or is not distinguishable from that of exophthalmic goiter is present in approximately only one or two of each thousand human thyroids resected. Many patients in this group later develop frank exophthalmic goiter. That all such thyroids are a part of this complex is possible, if not probable. Whatever their significance, the incidence demonstrates that they have no relation to pregnancy, to adolescence, and to the conditions supposed to throw stress on the thyroid and produce diffuse hypertrophy. On the other hand, in each thousand thyroids resected for exophthalmic goiter in patients with a high basal metabolism and moderate exophthalmos, from one to three show only pure diffuse colloid goiter. I am confident that hypertrophy was present at the time the exophthalmos developed.

The thyroids of many domestic and wild animals become markedly hypertrophic with changes such as of surroundings and diet, without any detectable constitutional disturbances. When hypertrophy is present, the findings are often more readily attributable to causes throwing stress on the thyroid than to an excess of thyroxin in the tissues. This hypertrophy can be prevented or caused to disappear by the administration of iodin. The same is true of the hypertrophic goiter of fish (Gaylord). The goiters of pig cretins are hypertrophic and the inference that they are under high stimulation is warranted. Iodin administered to the mothers prevents this type of goiter and the hypothyroidism, the immediate cause of the goiter, not the result.

The remnant of the thyroid in human cretins, if present, is usually distended with colloid. Diffuse hypertrophy is sometimes present. The nodules found in cretins usually shrink rapidly following the administration of thyroxin. Nodules 5 cm. in diameter may be reduced

within three or four weeks to the point of being barely palpable. It has long been known that iodin favors the disappearance of colloid goiter. Marine has demonstrated that iodin administration prevents the development of diffuse colloid goiter in man. What may be considered the acme of diffuse colloid goiter is most prevalent from the seventeenth to the twenty-first year. Each lateral lobe may be as large as a good sized fist. The thyroid arteries are distended and roll under the finger like a large lead pencil; bruit and loud thrill are present, and in the majority of cases the basal metabolism is from 8 to 15 per cent. below the average normal. In from twelve to twenty-four hours following the administration of thyroxin, the thyroid vessels are not palpable, and the bruit and thrill are no longer audible. The gland rapidly shrinks in size, in some instances becoming barely palpable in three weeks. The continuous administration of thyroxin prevents the reappearance of the goiter; however, on withdrawal of the drug, the thyroid may rapidly attain its original size. After absorption of the colloid, iodin in many instances at least will prevent its redeposition. That colloid goiters are capable of producing thyroxin if sufficiently stimulated is demonstrated by the fact that the basal metabolism drops but little, if any, following a resection of the gland.

The majority of diffuse colloid goiters that have come under our observation since we have fully recognized the fallacy in the absorption of thyroid preparations have been made to disappear or become barely palpable. The thyroid of the human cretin distended with colloid reacts as does the colloid goiter of adolescences. The preceding observation on the occurrence of colloid and hypertrophic goiter and their reactions to thyroxin and iodin administration can be correlated on the hypothesis which, if correct, is essential to our understanding of the relation of functional activity to anatomic changes in the thyroid: Without definite knowledge of the exact mechanism we can assume that the normal stimulation of the thyroid is brought into play by partial exhaustion of the thyroxin in the tissues. Factors interfering with the production of this agent lower the amount delivered from the thyroid. There may be several such factors. The one known factor is an actual or relative shortage of iodin. A thyroid so handicapped, if sufficiently stimulated, can produce a normal amount or even an excessive amount of thyroxin; however, relative to the normally functioning gland, it tends to lag behind the demands of the tissues, that is, it does not respond quantitatively to stimulation as does the normal thyroid. The degree of stimulation of such a gland is above the average and probably increases as the thyroid content of the tissues drops. Basal metabolism estimations suggest that this lag expressed as the amount of thyroxin in the tissues never exceeds 4 mg. The human gland acting under these conditions deposits an excess of colloid in its acini. This constitutes the diffuse colloid goiter of adolescence. Diffuse colloid considered as an entity probably never hyperfunctions. That glands of most animals acting under the same or simliar conditions develop diffuse hypertrophy seems probable.

It might be contended that the deposit of colloid interferes with the function of the thyroid and thus causes a shortage of thyroxin in the tissues. The mass of data does not correlate with this theory as it does with the theory attributing the mild hypothyroidism and colloid deposit to a common factor: namely, stimulation of the thyroid acini which are in some way handicapped in their functional ability. A hypothyroidism of sufficient degree to cause edema is, according to our observations, never due to goiter.

ADENOMATOUS GOITERS

Goiters usually classified under the terms "simple," "endemic," "adolescent," and so forth, are diffuse colloid, adenomatous, or a combination, particularly at their inception, of the two types. The majority of such goiters are first noticed during the latter half of the second decade. The colloid goiter usually disappears before the twenty-fifth year; however, there is a tendency for a thyroid once overloaded with colloid, irrespective of its functional activity, to retain more than the normal amount, that is, sufficient to make the gland easily palpable throughout life. The adenomatous nodules, often during the early part of their history buried in colloid goiter, never disappear, although they fluctuate much in size with their colloid content, vascularity, and degenerative changes.

The administration of iodin may prevent the formation of colloid goiter. That it may also be almost equally efficacious in the prevention of adenomatous goiter in adolescence seems probable. In fact, if the theme here presented is correct, to control adolescent goiter means to control adenomatous goiter also.

Two theories have prevailed with regard to hyperfunctioning adenomatous goiter: first, that the adenomatous tissue elaborates and delivers an excess of thyroxin, and second, that the adenoma in some way stimulates the surrounding thyroid tissue to hyperfunction. Though the question must still be considered open, the evidence correlates best with the theory that the adenomatous tissue hyperfunctions. Irrespective of the question of which type of tissue furnishes the excess of thyroxin, there is no doubt that the adenomatous tissue actually elaborates thyroxin and stores colloid and iodin. In the following discussion of adenomatous goiter, the facts may be coordinated with either theory; however, I have assumed that the adenoma hyperfunctions.

The majority of adenomatous goiters have their inception in colloid goiter. The embryonal cells seem to be stimulated through the same mechanism that forces the postnatally developed gland to maintain a normal level of thyroxin in the tissues. Possibly we should look on adenomatous tissue as a compensatory attempt. Such a theory does not eliminate the possibility that the formation of the new tissue may in some instances be excited by local irritants. Early in its life history, new adenomatous tissue can not function. A number of observations suggest that it can elaborate and store colloid long before it can elaborate and store thyroxin. It seems more prone, as does the prenatally developed thyroid tissues, to store colloid if it is unable to elaborate thyroxin or the rate of stimulation of the thyroid is above the average normal. Only rarely are the factors such that the adenomatous tissue will function, at least to the point of causing hyperthyroidism, before the latter half of the third decade although, as a rule, it is palpable in the second decade of life. The average interval between the time the adenomatous goiter is first noticed and the onset of hyperthyroidism, including only those that hyperfunction before coming under observation, is seventeen and one-half years. While the normal

stimulating mechanism is a factor in the inception of the adenomatous goiter, once this tissue has started to function, it does so erratically and without relation to the needs of the individual. This observation is borne out by the fact that the basal metabolism drops to normal, but not below, within eighteen days after the resection of the adenomatous tissue, and there is no tendency to a recurrence of the hyperthyroidism.

Six patients have come under my observation who, following very extensive resection of the thyroid for combined adenomatous and colloid goiter, have a basal metabolism from 12 to 17 per cent. below normal and a recurrence of multiple adenomas. These adenomas react to thyroxin as does colloid goiter. One of the patients has been under almost constant observation for two years. When the basal metabolism is brought to normal, the adenomas 5 cm. in diameter almost disappear. She can estimate her basal metabolism within 5 per cent., if it is not elevated above normal, from the size of the adenomatous nodules.

While the hyperthyroidism may come on suddenly and its course may be marked by waves of high intensity, it is characteristic of the disease to come on insidiously and for a long period, not infrequently for years, to run a course of low intensity, and to be brought to attention by the phenomena attributable to fatigue and by resulting degenerative changes, rather than by changes indicating a hyperthyroid state. Some patients may be hyperthyroid for many months either from hyperfunctioning adenomatous goiters or from the administration of thyroxin, and wholly unconscious of any departure from the normal status. Those of a nervous temperament, particularly the type prone to develop cardiac neuroses, are more apt to be disturbed.

The development of diffuse colloid goiter in man, other factors remaining constant, is determined by an equation taking into consideration the iodin available to the thyroid and the rate of exhaustion of thyroxin in the tissues. Infection of the organism, at least when attended with fever, probably increases the rate of exhaustion of thyroxin in the tissues. That infection of the thyroid can stimulate the gland to hyperfunction is indicated by a moderate degree of hyperthyroidism early in the history of patients having diffuse thyroiditis ultimately resulting in myxedema. That introduction of bacteria into the digestive tract is an important factor, if not the primary cause of endemic goiter, is fairly well established. As to how the organisms act in the host, there is no definite evidence. That the bacterial flora of the digestive tract may sufficiently interfere with the absorption of the small amount of iodin in the available diet is a possibility, particularly in areas in which this element is relatively small. The relation of the bacterial flora to the available iodin would well explain the geographic distribution of endemic goiter.

Potency of Antimeningococcic and Antipneumococcic Serums.—Since December, 1917, all lots of serum intended for use against meningococcus infection or pneumococcus infection (Type I), and subject to control by the Treasury Department, have been tested for potency at the hygienic laboratory. Tests for potency are made at the manufacturing establishments, but before being released for interstate sale, each lot must pass the official test at the hygienic laboratory. Under these provision, 461 lots of antimeningococcic serum and 781 lots of antipneumococcic serum have been tested. Numerous tests have also been made on serums from other sources.—*Pub. Health Rep.*, Nov. 21, 1919.

THE MEASUREMENT AND STANDARDS OF BASAL METABOLISM*

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That a strenuously active man, engaged in severe muscular work, gives off heat is not surprising to any one, but it is seldom fully realized that, even with a man in complete muscular repose, such as a bedridden patient, the end-result of all the internal glandular and muscular activities incidental to the maintenance of life is *heat*. So truly is the heat output determined by the intensity of vital processes that, conversely, it may be stated that the level of vital activity may be inferred from the amount of heat produced. This caloric index of metabolic intensity is of such a transient and fugitive nature that unusually complicated technic is required for its determination, and this fact has retarded not only its use but, more especially, an appreciation of the significance of its relationship to physiologic and pathologic research. Since heat is the end-product of all vital transformations, the latter could, theoretically at least, best be measured by some method of determining directly the heat given off from the body. Such a method calls for an extremely elaborate and costly apparatus, a calorimeter, which, to be of sufficient size for measuring directly the heat production of the human body, assumes an appearance so formidable as to unnerve completely the best of hospital technicians. Fortunately, other, indirect methods for estimating heat production are available. While heat is the end-result of glandular and muscular activity, oxidative processes are essential factors in these transformations. Thus, the intake of oxygen is essential to combustion, while the production of carbon dioxid makes up a very large part of the total oxidative activities of the body. Therefore, if one can measure accurately the carbon dioxid production or, still better, the oxygen consumption, a very close estimate of the total heat production, and consequently, of the end-result of the glandular and muscular activity may be secured.

COMPLICATED TECHNICS

The technics available for these measurements of the respiratory products have for many years been very complicated, involving in their most elaborate form a respiration chamber with its numerous appurtenances. In a somewhat less elaborate form, a mouthpiece or mask, together with valves and some appliance for measuring the total expired air, such as either a gas meter, a rubber bag or, more commonly, a spirometer, is necessary. But in addition to either of these forms of apparatus there is required that *rara avis*, a skilled gas analyst, on whom rests the determination of the changes in the composition of outdoor air, as it leaves the lungs. All of these methods have been in the special respiration laboratories, but have been introduced into hospitals in general to only a very small extent. Hence, clinical studies of gaseous metabolism have been made only by the relatively few workers in special laboratories, who have in but few instances been simultaneously clinicians.

* From the Nutrition Laboratory of the Carnegie Institution of Washington, Boston.

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

A SIMPLE TECHNIC

The Nutrition Laboratory has for many years been involved in a study to simplify the costly experimental technic for the measurement of gaseous metabolism. The final outcome of this study has been the development of a portable respiration apparatus that measures with extreme accuracy and great rapidity the oxygen consumption of human beings. Based on the important observation that when a human subject breathes pure oxygen the amount of oxygen taken up by the blood is the same as when ordinary air is inspired, a relatively simple technic for the measurement of the oxygen consumption of man, involving neither respiration chamber, valves, weighings nor gas analyst, has been evolved. Of the two respiratory gases, oxygen and carbon dioxid, this apparatus measures the oxygen consumption alone. But since it is the common experience of all clinics that, in those experiments in which where, by the older methods, both carbon dioxid and oxygen are determined, the oxygen consumption alone is of prime significance in the vast majority of pathologic cases, it can be seen that a method restricted to oxygen determinations will supply the needs for a large series of pathologic problems.

Normal control experiments, which are a necessary feature preliminary to all studies in disease, may, with the wide distribution of the portable respiration apparatus, be of great service to physiology and, ultimately, to pathology, provided such tests are intelligently planned and skilfully carried out. Indeed, the optimist can properly take the ground that whatever faults may arise in studying pathologic cases, whatever misinterpretations of data may be made, the development and wide distribution of the respiration apparatus can be fully justified by the contributions that each user of the apparatus can rightly be expected to make to our knowledge of normal metabolism.

REQUISITE CONDITIONS

In basal metabolism measurements, the requirements are that the subject should be, first of all, in the postabsorptive condition, that is, at least twelve hours after the last meal, and secondly, that he should be in complete muscular repose, preferably lying quietly without conversation or any psychic excitement for a half hour before the test begins. The room temperature should be not far from 20 C., and the subject should be sufficiently clothed or covered with bedding, to be perfectly comfortable. It is our custom in the Nutrition Laboratory, in order to rule out the possibility of a slightly febrile condition, to note the buccal temperature during the period of preliminary repose. Every effort should be made to secure a series of pulse rate records. This measurement may be taken at the wrist during the actual experiment itself and during the preliminary period, but is better taken by means of ear pieces attached to a Bowles stethoscope resting over the apex beat of the heart.

To be fully comparable with previous work, all normal experiments must be so conducted as to recognize certain fundamental points. Not infrequently the value of earlier work is greatly vitiated by the absence of certain fundamental physiologic measurements. For instance, a record of the sex, age, nude weight, and the height without shoes, must be considered as an essential part of the report. In addition, since it should be the aim of modern experimenters to secure better data, it is not unreasonable to ask that two new measurements, of value in determining the nutritional state of a subject, be supplied. One of these is the sitting height, the importance of which has recently been emphasized so strongly by Dreyer [1] of Oxford and by von Pirquet's [2] use of it in the nutritional tragedy in Vienna. Furthermore, it is believed by Dr. C. B. Davenport that the investigator, at the moment of obtaining the sitting height, should also measure the sitting height to the suprasternal notch, i. e., eliminating the length of neck and head, as this additional evidence will prove of even greater value in later years. Finally, as a part of the records of all those having a portable respiration apparatus at hand, with its carefully calibrated spirometer, there may reasonably be expected a measure of the vital capacity, which has also been emphasized by Dreyer [3] and by Peabody.[4]

ACCURATE MEASUREMENTS

Moreover, operators should be careful to record the degree of drowsiness of the subject. When the mouthpiece is used, unless the jaw is very much relaxed and opened, accurate oxygen measurements can readily be made with the portable respiration apparatus, and thus the question of sleepiness will not affect the technic. Parenthetically, I should like to add that a new procedure has recently been tested out in the Nutrition Laboratory, which serves admirably as a proof of absence of leak in these mouthpiece tests. Ordinarily the readings on the millimeter scale connected with the spirometer bell are taken only at the beginning and the end of a ten-minute period. In addition to these regular readings, as mentioned in various articles describing our technic,[5] it is now our custom to take a reading at about the middle of the period, say after four or five minutes, and immediately thereafter we place on top of the spirometer bell a weight, of usually not far from 35 to 40 gm. This weight remains on the bell until just before the final readings. Oviously, if there is a leak around the mouthpiece or any part of the apparatus, the weight on the spirometer bell will result in the expulsion of air from the apparatus into the room, thus indicating a larger oxygen consumption. Consequently, by computing the oxygen consumption during the first five minutes and comparing it with that during the last five minutes, one can invariably detect the presence of a leak.

Still better, if one attaches a small writing point to the counterpoise weight of the spirometer bell and allows this to write over the surface of a smoked paper kymograph drum, a remarkably satisfactory picture of the entire respiratory process can be obtained from the beginning to the end of a test. The straight line curve, touching the points representing the end of each expiration, shows a general upward tendency as oxygen is consumed, and the bell descends, and forms an angle with the base-line of the kymograph paper, varying by only two factors, first, the rate of speed

1. Dreyer, Georges, and Hanson, G. F.: The Assessment of Physical Fitness, London, Cassell & Co., 1920.
2. Von Pirquet: System der Ernährung, Berlin, 1917, **1**: 48, ff.
3. Dreyer, Georges: Lancet **1**: 365 (March 10) 1917.
4. Peabody, F. W., and Wentworth, J. A.: Clinical Studies of the Respiration, IV, The Vital Capacity of the Lungs and Its Relation to Dyspnea, Arch. Int. Med. **20**: 443 (Sept.) 1917.
5. Benedict, F. G.: Boston M. & S. J. **178**: 667, 1913. Hendry, M. F.; Carpenter, T. M., and Emmes, L. E.: Ibid. **181**: 285, 334, 363 (Sept. 4) 1919. Benedict, F. G.: Ibid. **182**: 243 (March 4) 1920. Benedict, F. G., and Collins, W. E.: Ibid. **183**: 449 (Oct. 14) 1920.

of the kymograph and, second, the rate of absorption of the oxygen. Assuming that these two factors remain essentially constant throughout a ten-minute period, we can see that if there is a leak when the weight is on the spirometer bell, the last half of the curve will have a decidedly different angle. Thus it is possible by either of two methods to detect absolutely the presence of a leak, particularly in experiments during sleep. When the subject is awake, our own experience has been that it is very difficult to secure a leak around the mouthpiece. For all of our research work the graphic method is invariably employed.

If these precautions are observed, records of basal metabolism are readily made, and the difficulty then shifts from the experimental technic to the scientific interpretation of the results.

INTERPRETATION OF RESULTS

The simplification of the technic for determining the respiratory metabolism is justifiable on the grounds that such technic in the hands of well-trained men will enable a much larger and more accurate accumulation of scientific data. The simplification of such technic is, on the other hand, dangerous, when it makes it possible for the tyro to secure measurements, which frequently neither he nor any of his associates are in a position to interpret intelligently and from which it is possible for him to draw deductions that are not only erroneous but, since they, not infrequently, may influence for or against operative procedure, may actually be of serious harm. This rapid and accurate method makes general use of gaseous metabolism measurements justifiable, therefore, only with the proviso that the operators have, first, acquired carefully and intelligently a relatively simple technic, and secondly, that in attempting to analyze or utilize results, they have previously made an intense study of the significance of respiratory metabolism. Unfortunately, the intellectual training of the operator has by no means progressed so rapidly as has the simplification of technic; and today we face a situation in which manufacturers are ready to supply almost unlimited numbers of simplified respiration apparatus, which are in a too great number of instances secured and put to use by operators wholly lacking in this fundamental and important education.

Even the most skilled and most experienced clinicians make at times sorry exhibits of their use of apparatus of this type. The apparatus is simple to use. We believe that an intelligent high-school girl can, after a few days of training, secure most satisfactory measurements of the oxygen consumption. No effort of the Nutrition Laboratory can, however, make up for the deficiency of theoretical consideration of the significance of basal metabolism measurements on the part of the user of these readily acquired metabolism measurements.

STANDARDS OF ANALYSIS

At the very start the results obtained in suspected cases must be scanned with an idea as to their normality or their relationships to normal results, and immediately great diversity of opinion arises as to what is normal. It must be realized that thus far the total number of published results for normal individuals, measured by perfectly comparable technics, is only in the hundreds. From these data, a large proportion of which has been accumulated in the Nutrition Laboratory, at least three sets of standards have been proposed: (1) the earliest, by Aub and Du Bois;[6] (2) the more complete biometric analysis by Harris and Benedict;[7] (3) and more recently a subsequent analysis by Dreyer[8] of Oxford. While in general these standards agree very well among one another, as is to be supposed, since they are all drawn from practically the same material, at times marked discrepancies are noted.

Muscular activity, digestion, psychic excitement, and sleep profoundly affect the metabolism, but the modern definition of basal metabolism presupposes measurements during complete muscular repose and with the subject in the postabsorptive condition. Yet, even under these conditions, as the careful biometric analysis of the Nutrition Laboratory material shows,[7] basal metabolism is affected independently by weight, height, age and sex. The prediction of the most probable basal metabolism of any given individual can, therefore, according to Harris and Benedict, be made by the use of the two following planar equations:

$$\text{For men} \quad h = +66.4730 + 13.7516w + 5.0033s - 6.7550a$$
$$\text{For women} \quad h = +655.0955 + 9.5634w + 1.8496s - 4.6756a$$

where h = total heat-production per twenty-four hours, w = weight in kilograms, s = stature in centimeters, and a = age in years. To simplify the use of these equations, tables have been prepared, from which two sets of values can be drawn, added together, and the predicted metabolism obtained. These tables, as well as all of the standards previously mentioned, and other tables of data, together with illustrative computations, have recently been published by Dr. Thorne M. Carpenter of the Nutrition Laboratory.[9]

VARIATIONS FROM THE STANDARD

Between the ages of 20 and 40 years, within which age range most of the experimental data analyzed by Harris and Benedict were obtained, the error of prediction of the basal metabolism is the smallest. Outside of this range, however, predictions can be made only with great care. Finally, special attention should be called to the fact that the prediction of the basal metabolism of women cannot be made with anything like the accuracy obtainable with man, and that even among so-called "normal" individuals, the measured basal metabolism frequently varies greatly from the standards. For the present, persons who are "presumably in good health" are taken as "normal" individuals.

There are a great many people who are fat, who have no demonstrable pathologic lesion. There are seemingly a large number of individuals who are thin, who come under the same head. These are classified as people "presumably in good health." Much more data on normals are imperatively needed.

UNDERNUTRITION

To the factors known to influence basal metabolism, already mentioned, should be added the very important one of undernutrition. By this is meant not simply starvation, but prolonged, persistent undernutrition, which results in perhaps even greater disturbances to

6. Aub, J. C., and Du Bois, E. F.: Metabolism of Old Men, Arch. Int. Med. **19**: 831 (May) 1917.
7. Harris and Benedict: Pub. 279, Carnegie Inst., Washington, 1919.
8. Dreyer, Georges: Lancet **2**: 290 (Aug. 7) 1920.
9. Carpenter, T. M.: Pub. 303, Carnegie Inst., Washington, 1921.

metabolism than does a relatively short, complete withdrawal of food. Since it is recognized that in many pathologic cases undernutrition is an ever present factor, it is readily seen how complicated the interpretation of metabolism data may become. For example, are we to consider as normal or not the thin, emaciated, 16-year old girl who has a metabolism per square meter of body surface as high as that called for by the standard of Aub and Du Bois? The very fact that there is emaciation and undernutrition would speak for a low metabolism. On the other hand, if the metabolism is found to be normal by this standard, should not one suspect the presence of some superimposed factor which more than offsets the depressing influence of the undernutrition?

CONCLUSIONS

Keeping these several factors in mind, we can see, therefore, that the use of a so-called "standard" or "normal" metabolism is fraught with considerable danger and that the interpretation of metabolism results is not a simple rule-of-thumb procedure. In fact, the interpretation of results now far exceeds in complexity the actual laboratory technic. The technical stumbling blocks to the advancement of metabolism studies in clinical medicine have, we believe, been overcome. The great intellectual stumbling block, namely, lack of education with regard to the significance of metabolism measurements, cannot be overcome by the efforts of any one laboratory, one school, or one teacher. Before using gaseous metabolism measurements, it behooves every physician to familiarize himself thoroughly with the fundamentals of gaseous metabolism and its significance. May we not hope that medical schools in general will give this fact recognition and provide for it in their curriculums, thus furthering the admirable work instituted by Dr. Eugene F. Du Bois at the Cornell University Medical College.

FUNDAMENTAL IDEAS REGARDING BASAL METABOLISM *

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As early as 1839, Sarrus and Rameaux [1] stated that, since the loss of heat in animals must be proportional to their surface area, therefore the heat production must be proportional to the same unit.

Regnault and Reiset,[2] ten years later, wrote:

> The consumption of oxygen absorbed varies greatly in different animals per unit of body weight. It is ten times greater in sparrows than in chickens. Since the different species have the same body temperature, and the smaller animals present a relatively larger area to the environmental air, they experience a substantial cooling effect, and it becomes necessary that the sources of heat production operate more energetically and that respiration increase.

Only three years after this, Bidder and Schmidt [3] made the following thoroughly modern statement:

> The extent of the respiration, like every other component of the metabolism process, is to be regarded as a function of one variable, the food taken, and one constant, a distinctly typical metabolism (Respirationsgrösse) which varies with the age and sex of the individual. This factor characterizes every animal of a given race, size, age and sex. It is just as constant and characteristic as the anatomic structure and the corresponding mechanical arrangements of the body. It is in the main determined by the heat consumption in the organism; that is to say, the replacement quota for heat lost to the body through radiation and conduction to the environment in a given unit of time. It may therefore be used to determine this, or in case the factor of heat loss is known, one can deduce the extent of the metabolism.
>
> This typical metabolism . . . is that of the fasting animal. It must be nearly the same in animals having the same body volume, surface and temperature; the larger the body surface, the body volume and temperature remaining constant, or the higher the body temperature with surface and volume constant, the higher will be the metabolism as determined by the laws of static heat.
>
> Of course a sharp mathematical treatment of this phenomenon can be thought of only after very numerous and exact experimental determinations on animals of most varied form, size and temperature.

Rubner [4] first applied exact calculations to this problem, and he announced that dogs varying from 3 to 30 kg. in weight produced the same number of calories per square meter of body surface, though per kilogram of body substance the heat production was 88 calories per kilogram in the smallest dog and only 36 calories per kilogram in the largest one. He remarks:

> Large and small dogs do not metabolize different quantities of food because their cells are differently organized, but because cooling influences on the skin excite the cells to activity.

Shortly after Rubner's publication, Richet, in 1885, showed that a cat, a rabbit and a goose, all of similar weights, produced approximately the same amounts of heat. He stated that in future one should express all calorimetric observations in terms of surface area and not in weight, a principle now very largely followed in the United States.

Rubner later came to a better understanding regarding the cause of the Law of Surface Area. He found that two guinea-pigs of different sizes had the same heat production per square meter of surface, even though they lived surrounded by air at a temperature of 30, thus excluding all thermal influences. He realized from this that the level of the basal metabolism could not be caused by the influence of cooling on the body, and no one has since thought so. Rubner,[5] however, stated that he believed that the phenomenon observed was the result of accommodation to the action of cold to which animals in former ages had been exposed.

My own work has shown that a cold sugar solution, introduced into the stomach of a dog, can induce an extra production of heat extending over several hours. The body can therefore still respond to a withdrawal of heat by a compensatory production of it.

Rubner calculated the surface area of animals by the formula of Meeh,[6] published in 1879. This formula assumed that the surface was a function of the $\frac{2}{3}$ power of the volume. Since animals contain the same materials, weight may be substituted for volume. The

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Sarrus and Rameaux: Bull. Acad. roy. de méd., Paris **3**: 1094, 1839.
2. Regnault and Reiset: Annales de chimie et de physique, Series 3 **26**: 299, 1849.
3. Bidder and Schmidt: Die Verdauungssäfte und der Stoffwechsel, Mitau and Leipzig, 1852, p. 348.
4. Rubner, M.: Ztschr. f. Biol. **19**: 549, 1883.
5. Rubner: Die Gesetze des Energieverbrauchs bei der Ernährung, Leipzig and Vienna, 1902, p. 174.
6. Meeh: Ztschr. f. Biol. **15**: 425, 1879.

result thus obtained was multiplied by a constant k which expressed the relationship of weight in kilograms to surface in square meters for a given species. For man, the formula of Meeh was $12.3\sqrt[3]{(\text{body weight})}$.[2] It may be noted here that Dreyer, Ray and Walker [7] found that the surface area, blood volume and cross sections of the aorta and of the trachea are all proportional to the $\frac{2}{3}$ power of the weight. Dreyer later concluded that the vital capacity was a simple function of the body surface. Moulton [8] found that the surface area was a two third power function of the total body nitrogen of beef cattle and, therefore, of the protoplasmic mass. This confirms the conclusion of Carl Voit that the mass of the cells and their power to oxidize materials determines the height of the metabolism. One should remember, however, in this relation the fact that in very corpulent people the heat production appears proportional to the surface area and not to the mass of protoplasm.

Using Meeh's formula, McCrudden and I,[9] in 1912, found that the basal metabolism of a dwarf was 775 calories per square meter of surface, and of two dogs 759 and 784 calories, respectively, results which agree within 3 per cent. Comparing these with results obtained by Benedict on four men, it was found that they produced an average of 789 calories per square meter of surface. It was also pointed out that an infant 5 months old, investigated by Howland, produced 1,100 calories per square meter of surface in twenty-four hours. This accords with former observations made in 1899 by Magnus-Levy and Falk.[10]

As early as 1895, Sondén and Tigerstedt [11] pointed out that the heat production of children during the period of adolescence was relatively higher per square meter of surface than in the adult. This long-neglected scientific information was confirmed by the contributions of Murlin and of Du Bois, as well as by the extensive and valuable studies of Benedict and Talbot. About this time it was found that the food prescribed by the commonly accepted dietary standards was insufficient for the nourishment of children in the regions of occupied Belgium and blockaded Germany.

With the establishment of the calorimeter of the Russell Sage Institute of Pathology in Bellevue Hospital during the winter of 1912-1913, under the active control of Du Bois, it became absolutely necessary to seek for accurate standards with which to compare the heat production in hyperthyroidism, for example, with the heat which the patient would presumably have produced had he been perfectly well. As there was a lack of accurate data, Gephart and Du Bois [12] investigated the heat production of several normal controls, and in their preliminary work established the value of 34.7 calories per square meter of body surface per hour as representing the basal metabolism of individuals of usual shape when the surface area was calculated by the Meeh formula. Although criticism has been made that protoplasmic mass is the sole criterion of the intensity of metabolism, it appeared beyond the bounds of possibility to determine the protoplasmic mass in hyperthyroidism, whereas the Meeh formula furnished the most ready means then at hand of estimating the surface area. Du Bois at that time came to the conclusion that, although Meeh's formula might not accurately measure the surface area, at least the heat production was proportional to Meeh's formula.

Finally, E. F. Du Bois actually measured the surface area of several individuals, and with his cousin, Delafield Du Bois,[13] worked out a formula from the measurements obtained. He was thus able to calculate the true surface area within an average error of $\pm$ 1.5 per cent. and a maximal variation of $\pm$ 5 per cent. Meeh's formula proved to have an average inaccuracy of 16 per cent. and a maximal variation of 36 per cent., the latter being found in the obese.

The now generally used Du Bois height-weight formula for determining the surface area indicated that the measure of the basal metabolism was 40 calories per square meter per hour in men, and 7 per cent. less than this in women. Du Bois claimed an accuracy of within $\pm$ 10 per cent., but of late others have ascribed even a greater degree of accuracy to his method. His body surface formula shows that very obese women, like the one described by Means as being a "veritable pork barrel," conform to Rubner's law that the heat production of the basal metabolism is proportional to the surface area.

Following Du Bois, Benedict and Harris published a book entitled "Biometric Study of the Basal Metabolism in Man," and gave various tables for the computation of the basal metabolism. Using these tables for people of early adult life, the calculations by both methods yield essentially the same results. The average basal metabolism of three old men, as determined by Benedict, was much lower than that found in six old men by Aub and Du Bois,[14] and this tends to throw doubt upon the calculations of the true basal metabolism of old men. It may, however, be added that the basal metabolism of Zuntz remained at a constant level from the age of 41 to the age of 63.

Dreyer [15] has objected to the introduction of the standing height as a factor in the calculation of the surface area on the ground that it is not a physiologic measurement, and he regards the sitting height as a more normal expression. He has evolved a formula which is based on age and weight alone. He states that this formula indicates that basal metabolism is not a simple function of body surface.

However, Dreyer calculates that the deviation between observation and calculation for Benedict's own series is, in the case of males, 5.27 per cent. by his own formula, 5.33 per cent. by Benedict's method, and 5.65 per cent. by Du Bois' method of calculation. These differences, which amount to only 0.38 per cent. at most, do not appear to be so considerable as to manifest, for one formula over the others, a readily distinguishable refinement of procedure.

Applying Dreyer's formula to the predictable metabolism of the six old men investigated by Du Bois and Aub, the average deviation from the metabolism actually measured amounts to + 2.2 per cent., whereas Benedict's formula shows a discrepancy of + 19.7 per cent. This, however, is a detail. The main facts are established. The controversy is concerning interpretations and theories.

7. Dreyer, Ray and Walker: Proc. Roy. Soc. Series B **86**: 39, 56, 1912-1913.
8. Moulton, C. R.: J. Biol. Chem. **24**: 299 (March) 1916.
9. McCrudden and Lusk: J. Biol. Chem. **13**: 450, 1913.
10. Magnus-Levy: Arch. f. Physiol., Supplement, 1899, p. 388.
11. Sondén, K., and Tigerstedt, R.: Skand. Arch. f. Physiol. **6**: 1, 1895.
12. Gephart, F. C., and Du Bois, E. F.: The Determination of the Basal Metabolism of Normal Men and the Effect of Food, Arch. Int. Med. **15**: 835 (May) 1915.
13. Du Bois, Delafield, and Du Bois, E. F.: The Measurement of the Surface Area of Man, Arch. Int. Med. **15**: 868 (May) 1915.
14. Aub, J. C., and Du Bois, E. F.: The Basal Metabolism of Old Men, Arch. Int. Med. **19**: 823 (May) 1917.
15. Dreyer, G.: Lancet **2**: 289 (Aug. 7) 1920.

In a recent publication Benedict [16] pens the following statement:

As a result of the critique of the body surface law presented by Harris and Benedict, we believe that the accurate measurements of body surface made possible by Du Bois may *legitimately* be used in a manner heretofore never practicable in metabolism experiments, *provided* that they are considered as physical measurements and with no erroneous conceptions as to the existence of a causal relationship between surface area and heat elimination.

I believe this statement to be somewhat exaggerated. I believe that the Du Bois standards for basal metabolism can be relied on, and I also believe that, though one may doubt the causal relationship between surface area and heat elimination, such doubt will not invalidate the arithmetic employed in the calculation. In making this statement I recall the words of Carl Voit, uttered regarding another matter:

I maintain this as an incontestable fact. It is of itself so important that I question whether it is desirable to add a word of explanation. The results of a properly conducted and properly appreciated experiment can never be annulled, whereas a theory can change with the progress of science.

The establishment of a predictable basal metabolism enabled those working with the Russell Sage calorimeter to interpret the variations from the normal in many diseased conditions and has offered a method now widely accepted throughout the world for a closer clinical diagnosis of several pathologic conditions.

THE BASAL METABOLIC RATE IN HYPERTHYROIDISM *

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By the term hyperthyroidism is meant the clinical syndrome resulting from the presence in the body of an excess of thyroxin, which Kendall [1] has identified as the active principle of the thyroid gland, and which, according to Plummer,[2] "is a catalyst that accelerates the rate of formation of a quantum of potential energy in the cells of the organism." This syndrome is characterized by an increased basal metabolic rate, and by intoxication clinically evidenced by nervousness, tremor, tachycardia, loss in strength and weight, and in the later stages, myocardial disintegration.

FACTORS INFLUENCING BASAL METABOLIC RATE

Plummer [2] has proved the calorogenetic action [3] of thyroxin by extensive basal metabolic rate studies, following its intravenous injection in myxedematous and normal persons, and also by partial removal of the thyroid gland from patients with hyperthyroidism. From the basal metabolic rate curves thus obtained it can be calculated that from 12 to 14 mg. of active thyroxin must be present in the body to maintain the basal metabolic rate at the normal level, and that the rate of loss or destruction of the thyroxin is probably not far from 0.5 mg., daily. The average calorogenetic action resulting from the intravenous injection of different amounts of thyroxin in sixty-nine cases of myxedema or hypothyroidism of varying degrees of intensity is summarized in Table 1, and a characteristic curve is given in Chart 1, together with a curve illustrating the return to normal in the basal metabolic rate, following the removal of an adenoma from a patient having adenoma with hyperthyroidism. Therefore, pathologic variations in the basal metabolic rate are due, at least in disorders of the thyroid gland, either to an increase or to a decrease in the normal quantity of thyroxin in the body, thus explaining the characteristic and fundamental alterations in the basal metabolic rate found in hyperthyroidism and in hypothyroidism.

TABLE 1.—INCREASE IN BASAL METABOLIC RATE FROM INTRAVENOUS INJECTION OF THYROXIN

Increase per mg.	2.8	Increase per mg. per sq.m.	4.7
Average variation	0.7 = 25%	Average variation	1.1 = 23%
Largest + variation	2.8 = 100%	Largest + variation	2.9 = 60%
Largest − variation	1.8 = 64%	Largest − variation	2.9 = 60%

	Variation in Calorogenetic Action Depending on the Original Level of the B. M. R.				Variation in Calorogenetic Action Depending on Size of Dose			
Average B. M. R.	Average Dose	Increase per Milligram	Average Dose per Sq. M.	Increase per Milligram per Sq. M.	Average Dose	Increase per Milligram	Average Dose per Sq. M.	Increase per Milligram per Sq. M.
Above to −14	8.7	3.3	5.7	5.0	4.8	3.5	3.6	5.0
−15 to −19	9.1	2.3	5.1	3.9	6.9	2.8	5.2	5.0
−20 to −24	7.3	2.9	4.6	4.6	8.8	2.9	7.0	5.2
−25 to −29	10.9	2.8	6.2	5.0	11.2	3.3	9.3	4.8
−30 to −34	14.8	2.9	9.2	4.9	16.0	2.6	11.5	2.7
−35 and below	15.5	3.0	8.6	5.1	24.0	1.6	13.2	3.0

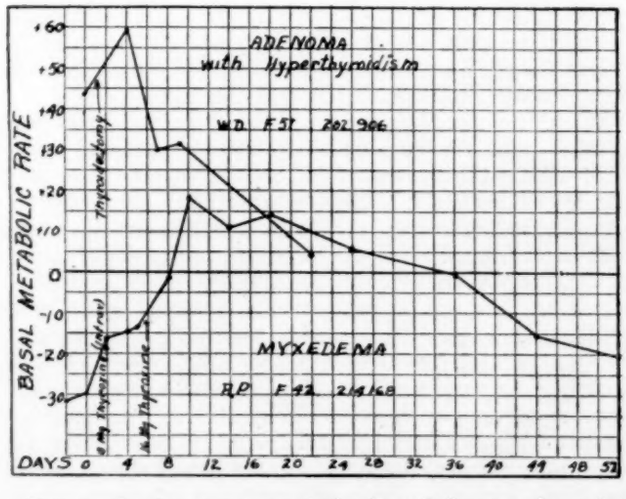

Chart 1.—On the upper curve the basal metabolic rates of a patient having adenoma with hyperthyroidism are plotted showing the original preoperative rate and the immediate postoperative rise in the metabolic rate, followed by the drop to normal after partial thyroidectomy. The lower curve illustrates the effect on the metabolic rate of a myxedematous patient of two intravenous injections of 8 and 16 mg. of thyroxin, from which can be calculated the amount of thyroxin needed to bring such a patient to a normal metabolic rate; and therefore the presumable amount of thyroxin in the body, and also the rate at which the thyroxin is destroyed or eliminated.

16. Benedict and Talbot: Metabolism and Growth from Birth to Puberty, Pub. 302, Carnegie Institution of Washington, 1921, p. 159.

*Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, J. Biol. Chem. **39**: 125-146 (Aug.) 1919.

2. Plummer, H. S., and Boothby, W. M.: Specific Dynamic Action of Thyroxin, Am. J. Physiol. **55**: 295-296, 1921.

3. Dr. Graham Lusk has requested that the term "specific dynamic action," previously used by Plummer and Boothby to indicate the calorfiic or heat producing power of thyroxin and epinephrin, be reserved to express the increase in heat production following the ingestion of a foodstuff, maintaining the sense of the term as originated by Rubner. The term "calorogenetic action" has been suggested by Dr. Lusk, after consultation with Dr. Francis G. Benedict, to signify the specific stimulus to metabolism given by such substances as thyroxin and epinephrin.

However, other factors than the quantity of thyroxin in the tissues may exist which play a part in the maintenance of the normal basal metabolic rate and influence its abnormal fluctuations, especially of a temporary nature. Removal of the suprarenals has been shown by Aub [4] to cause a decrease in the basal metabolic rate, which may be brought back to normal by the slow intravenous injection of suprarenal extract, at the rate stated by Stewart and Rogoff to be the normal output in the body. Conversely, Boothby and Sandiford [5] have shown that epinephrin possesses a calorogenetic action in man when injected subcutaneously (0.5 c.c. of 1:1,000). However, the evidence is not yet conclusive that the suprarenal glands are concerned with the normal rate of resting cellular combustion, or that they are the primary cause of abnormal rates of any definite clinical syndrome, notwithstanding the fact that decreased rates have been reported in Addison's disease and following experimental suprarenalectomy.

TABLE 2.—STATISTICAL STUDY OF 1,656 CASES OF GOITER*

	Adenoma		Exophthalmic Goiter		
	Non-Toxic	Toxic	Two Ligations, Rest and Thyroidectomy	One Ligation Thyroidectomy	Thyroidectomy
Number of cases studied	254	366	341	275	420
Age	44	48	37	38	36
Duration goiter, years	15.7	18.0	3.4	3.9	5.0
Age at onset of goiter	28	30	34	34	31
Duration symptoms, years	...	1.8†	1.6	1.5	1.3
Age at onset of symptoms	...	46	35	37	35
Cardiac decompensation:					
Positive	13%	46%	54%	48%	24%
Probable	5%	10%	9%	5%	7%
Exophthalmos	2%‡	3%‡	67%	65%	51%
Thrills	4%	5%	63%	58%	39%
Fruit	12%	12%	87%	86%	67%
Weight, pathologic specimen, gm.	187	152	59	55	51
Glycosuria	1%	2%	1.4%	1%	1%
Blood pressure:					
Systolic (floor) §	141	158	150	146	141
Diastolic (floor)	85	86	75	74	77
Pulse pressure (floor)	56	72	75	72	64
Pulse rate (floor)	91	107	125	121	113
Basal metabolic rate	+2%	+30%	+65%	+53%	+33%
Clinical diagnosis correct**	98%	88%	99%	98%	97%

* Differential diagnosis of adenoma without hyperthyroidism (nontoxic adenoma), adenoma with hyperthyroidism (toxic adenoma), and exophthalmic goiter. The cases of exophthalmic goiter are divided into three groups depending on the surgical treatment: (1) two ligations, two to three months' rest at home and thyroidectomy, (2) one superior pole ligation followed by thyroidectomy and (3) primary thyroidectomy.

† 1.8 represents the average duration since the onset of definite symptoms; however, it is possible to elicit a history of possible duration of 3.2 years, and in this respect differs from exophthalmic goiter which has a much clearer cut onset.

‡ The exophthalmos was only slight in these cases; never more than degree 1 on a scale of 4 and corresponds to that so frequently seen in certain types of nephritis.

§ The blood pressures and pulse rate were those obtained at the time of the clinical examination with the patient sitting.

** Accepting the report of the Section on Surgical Pathology made by fresh frozen section examination at the time of operation as correct, the previous clinical diagnosis was found to correspond as indicated. The close agreement between the pathologist's diagnosis of adenoma on the one hand and diffuse parenchymatous hypertrophy (exophthalmic goiter) on the other hand and the respective clinical diagnoses is very striking; the pathologist, however, cannot distinguish adenomas that produce hyperthyroidism from those that do not.

The possible increased basal metabolic rate in active acromegaly, and the decreased rate in the syndrome known as hypopituitarism, suggest that alterations in the activity of the pituitary gland may change the metabolic level. There is, however, as yet little evidence that the secretion of any part of the pituitary gland is concerned with the normal rate of cellular combustion in the sense that it acts as a calorogenetic agent. There are certain other diseases in which very occasionally an increased basal metabolic rate has been found; the cause of the increased heat production in these instances is not known.

4. Aub, J. C.; Forman, J., and Bright, E. M.: The Effect of Adrenalectomy Upon the Total Metabolism of the Cat, Am. J. Physiol. **55**: 293, 1921.

5. Boothby, W. M., and Sandiford, Irene: The Relationship of the Increase in Blood Sugar Concentration to the Specific Dynamic Action of Glucose and to the Specific Dynamic Action of Adrenaline, Am. J. Physiol. **55**: 293-294, 1921.

TABLE 3.—DURATION OF GOITER IN ADENOMA WITH AND WITHOUT HYPERTHYROIDISM AND IN EXOPHTHALMIC GOITER (1,656 CASES)

Duration, Years	Exophthalmic Goiter, per Cent.	Adenoma	
		With Hyperthyroidism, per Cent.	Without Hyperthyroidism, per Cent.
From 0 to 0.9	42		
From 1 to 1.9	15		
From 2 to 2.9	9	17	10
From 3 to 3.9	6		
From 4 to 4.9	3		
From 5 to 9.9	11	14	18
From 10 to 14.9	4	13	17
From 15 to 19.9	4	13	18
20+	5	43	37
Average duration, years	4.2	18	15.7

At this meeting Du Bois has shown that the increase in the basal metabolic rate accompanying febrile diseases follows Van't Hoff's law of the velocity of chemical reactions with temperature changes; it is about doubled for an increase of 10 degrees C.

A decrease in the basal metabolic rate is characteristic of myxedema and is due to the inability of the thyroid gland to supply a sufficient amount of thyroxin. A lowered basal metabolic rate has been consistently found in experiments in prolonged fasting, and in clinical conditions of inanition in which the food supply is decreased over a long period (stricture of the esophagus, cardiospasm, anorexia nervosa, etc.); the mechanism producing this decreased rate is not known, yet it seems quite probable that it may be a compensatory slowing down of the life processes in an endeavor on the part of the organism to prolong life on a minimum utilization of its stored food, and that the thyroid gland itself takes part in this decreased compensatory process, with a consequent reduction in the amount of thyroxin acting as a catalyst.

TABLE 4.—AGE AND OCCURRENCE OF ADENOMA WITH AND WITHOUT HYPERTHYROIDISM AND EXOPHTHALMIC GOITER

Age	Percentage of Patients by Decades Having Hyperthyroidism Caused by (1) Adenoma or (2) Exophthalmic Goiter			Percentage of Cases in Each Decade of (1) Adenoma Without Hyperthyroidism, (2) Adenoma With Hyperthyroidism, (3) Exophthalmic Goiter		
	Number of Cases	Adenoma, Toxic	Exophthalmic Goiter	Adenoma		Exophthalmic Goiter
				Nontoxic	Toxic	
From 0 to 9	1	0%	100%	0%	0%	1%
From 10 to 19	59	8%	92%	1.5%	1%	5%
From 20 to 29	280	10%	90%	8%	8%	24%
From 30 to 39	374	13%	87%	24%	13%	31%
Below 40	714	....	....	33%	22%	61%
From 40 to 49	358	30%	70%	33%	29%	24%
From 50 to 59	253	46%	54%	27%	32%	13%
From 60 to 69	75	77%	23%	6%	16%	2%
From 70 to 79	2	100%	0%	0.5%	1%	0%
Above 40	688	....	....	67%	78%	39%
No. cases	1,402	366	1,036	254	366	1,036
Aver. age	.....	48	37	44	48	37

UNSTABLE FOUNDATION OF ENDOCRINOLOGY

While we recognize that there is a biologic interdependence not only of every organ but of every cell in

the body, nevertheless we are able to measure quantitatively only the calorogenetic power of the active principle of the thyroid gland; consequently we deprecate the tendency so much in evidence in current literature to parcel out to each ductless gland a certain definite yet entirely hypothetic power, and to build on such an unstable foundation the mammoth superstructure expressed in the term endocrinology.

ADENOMA WITH HYPERTHYROIDISM

Plummer [2] has shown that pure hyperthyroidism can be produced in a person by the administration of an excess of thyroxin, and that the syndrome thus produced cannot be distinguished from that caused by an overactive adenoma of the thyroid gland. In each case, either the discontinuance of the thyroxin or the operative removal of the adenoma ends the syndrome, and the patient rapidly returns to a normal condition, with a normal basal metabolic rate (Table 5). The characteristic symptoms of adenoma with hyperthyroidism are those that can be predicted from a knowledge of physiologic effects produced by a prolonged increase in the rate of cellular combustion; consequently, for many years Plummer [6] has spoken of the overfunctioning adenoma of the thyroid as "adenoma with hyperthyroidism," and has recognized the disease as a clinical entity with a characteristic course and symptoms. In this condition, the thyroid gland presents, on pathologic examination, discrete, single or multiple nodular adenomatous tumors in various stages of degeneration, surrounded by a definite capsule.

TABLE 5.—EFFECT OF OPERATIVE TREATMENT ON 284 CASES OF EXOPHTHALMIC GOITER AND ADENOMA

	Exophthalmic Goiter										Adenoma			
	Two Ligations, at Home and Thyroidectomy				One Ligation and Thyroidectomy			Primary Thyroidectomy			With Hyperthyroidism		Without Hyperthyroidism	
	Ten Days After				Ten Days									
	Before Treatment	After Second Ligation	Two Months' Rest	After Thyroidectomy	Before Treatment	After First Ligation	After Thyroidectomy	Before Treatment	After Thyroidectomy		Before Treatment	After Thyroidectomy	Before Treatment	After Thyroidectomy
B. M. R.	+68%	+51%	+43%	+20%	+60%	+39%	+17%	+36%	+8%		+35%	+6%	−3%	−9%
Systolic blood pressure	139	132	131	125	137	126	119	133	122		145	133	115	115
Diastolic blood pressure	75	72	72	75	71	66	71	73	73		81	78	74	70
Pulse pressure	64	60	59	50	66	60	48	60	49		64	55	41	45
Pulse rate	122	114	108	93	116	106	92	107	86		102	79	74	73
Weight	52.3	48.0	56.6	56.3	52.8	49.7	50.7	53.3	52.9					
No. cases in each group	55				42			72			92		23	

EXOPHTHALMIC GOITER

Until recently, adenoma with hyperthyroidism has been confused with exophthalmic goiter, which is another pathologic condition of the thyroid gland, consisting of diffuse parenchymatous hypertrophy, symmetrically involving the entire gland. Clinically, exophthalmic goiter, like adenoma with hyperthyroidism, is characterized by an increased basal metabolic rate and, therefore, both diseases have in common the symptoms due to the increased rate. However, exophthalmic goiter has a different clinical course from adenoma with hyperthyroidism, and, in addition, certain peculiar and characteristic symptoms, one or more of which are present in varying degrees, such as exophthalmos, thrills and bruit, tendency to gastrointestinal crises, and a peculiar type of nervousness. That we are dealing with two entirely distinct diseases in exophthalmic goiter and in adenoma with hyperthyroidism has been proved beyond reasonable doubt by Plummer,[7] by the difference in the mode of onset of the two diseases, the clinical course and duration of the symptoms, the physical findings, and, finally, the difference in the pathology of the thyroid gland. The differential points in the two diseases are strikingly shown in Tables 2, 3 and 4. To account for these differences, the most probable hypothesis is that in exophthalmic goiter, not only are the thyroid cells producing an excess of thyroid hormone, but also the secretion so formed has some abnormal and peculiar chemical properties that produce the symptoms that differentiate it from pure hyperthyroidism. Kendall [1] has suggested that probably there is, in exophthalmic goiter, a slight alteration in the structure of the thyroxin molecule.

The delay in the recognition of adenoma with hyperthyroidism as a disease distinct from exophthalmic goiter has been due in part to the fact that it was not at first recognized that small isolated areas of hypertrophic cells, such as may be found in some adenomatous thyroids, do not produce the clinical syndrome of exophthalmic goiter and, conversely, that diffuse parenchymatous hyperthrophy may develop in a gland in which adenomatous tumors are incidentally present.

OPERATIVE PROCEDURE IN THE TWO DISEASES

Aside from the academic interest in differentiating adenoma with hyperthyroidism and exophthalmic goiter, the correct diagnosis is of great clinical importance because the times of onset, duration, course and outcome are different; furthermore, the operative program is not the same in these two diseases. In adenoma with hyperthyroidism, the operation is directed to the removal of the tumor, while in exophthalmic goiter the surgical procedures are planned to reduce, in the severer cases, the overactivity of the diffuse parenchymatous hypertrophied thyroid by successive steps: first, hot water injection, second, one or more ligations, and, finally, one or more partial thyroidectomies. In adenoma with hyperthyroidism, preliminary ligation of the blood vessels is seldom of benefit even in the severe cases, while in exophthalmic goiter the benefit from ligation is usually quite marked. Simple enucleation of the adenoma is almost invariably sufficient to cure the patient suffering from adenoma with hyperthyroidism; on the other hand, extensive resection of the greater part of both lobes and the isthmus is necessary to reduce the activity of the hypertrophic parenchymatous thyroid of exophthalmic goiter within normal limits, and not infrequently a second and

6. Plummer, H. S.: The Clinical and Pathologic Relationship of Hyperplastic and Nonhyperplastic Goiter, J. A. M. A. **61**: 650-651 (Aug. 30) 1913.

7. Plummer, H. S.: The Clinical and Pathologic Relationship of Simple and Exophthalmic Goiter, Am. J. M. Sc. **146**: 790-796, 1913.

occasionally a third resection are necessary before the intensity of the intoxication is brought within the bounds of safety. The effect of operative treatment is illustrated in Table 5.

It is well known that the course of exophthalmic goiter proceeds in cycles of intensity with intervening periods of partial and occasionally total remission. Experience has shown that the dangers of any operative interference during the rising curve of intensity and at the peak, especially if associated with gastrointestinal crises and loss of weight, are greater than during the stage of improvement. The curve of the basal metabolic rate in conjunction with the loss or gain in body weight of the patient are valuable mathematical expressions of the intensity and phase of the intoxication cycle. We have been unable to prove that the roentgen ray definitely influences the natural course of exophthalmic goiter.

DIAGNOSTIC VALUE OF BASAL METABOLIC RATE

Accepting the definition of hyperthyroidism as a clinical syndrome resulting from the presence in the body of an excess of thyroxin which increases the rate of heat formation, and the conception that the basal metabolic rate serves as a fundamental classification of disease,[8] it is obvious that a very sharp distinction can be drawn between mild cases of exophthalmic goiter, and those conditions known as "effort syndrome," "disorderd action of the heart," "cardiac neurosis," "nervous instability," "neurocirculatory asthenia" or "neurasthenia," which on superficial examination present some of the signs and symptoms of mild exophthalmic goiter, but in which the basal metabolic rate is normal, and which on close analysis can be shown not to be dependent on an excess in the body of the thyroid hormone. The basal metabolic rate is of particular diagnostic value in these cases when they are accompanied, apparently without causal relationship, by a colloid enlargement of the thyroid gland, as so often occurs in the regions of the endemic goiter.

VALUE OF VARIOUS TESTS

Confusion in the differential diagnosis of functional neurasthenia from mild exophthalmic goiter and adenoma with hyperthyroidism has been increased during the last few years by the revival of the epinephrin hypersensitive test in a new guise by Goetsch.[9] A series of studies by Peabody[10] and his associates, and similar studies from our laboratory,[11] have shown that there is no correlation between the intensity of the epinephrin reaction and the degree of hyperthyroidism as controlled by simultaneous studies of the basal metabolic rate; also, that the so called "positive" epinephrin reaction is present in a large percentage of cases that are not hyperthyroid, and even occasionally in patients with myxedema. Studies on the action of epinephrin by Boothby and Sandiford[12] show that there is not sufficient physiologic basis for the assumption that the reaction to the subcutaneous injection of an active principle of the suprarenal gland is indicative in clinical medicine of activity of the thyroid gland. The blood sugar curves as shown in Chart 2, following the ingestion of 100 gm. of glucose, have not been sufficiently consistent in the different types of cases studied by us to be of diagnostic value, in spite of the fact that high and prolonged curves were more frequently found in patients with hyperthyroidism than in those with hypothyroidism.

CONCLUSIONS

The basal metabolic rate, which is a determination of the heat production in a person under standard conditions, serves as a measurement of the most fundamental process of life itself. Variations of the heat production, and alterations in the body temperature are to be considered rightly a means of fundamental disease classification, and the basal metabolic rate serves as an accurate diagnostic aid in the recognition of the presence or absence of hyperthyroidism.

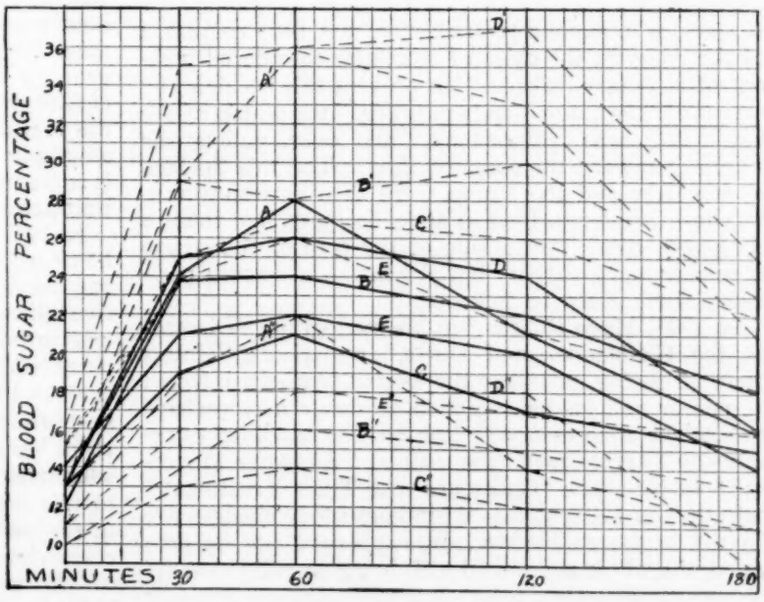

Chart 2.—The heavy black lines represent the average blood sugar curves following the ingestion of 100 gm. of glucose in patients having various basal metabolic rates; the dotted lines represent the upper and lower limits of each group. *A*, *A'* and *A"*, average upper and lower limits for seven cases with basal metabolic rates between + 4 and + 59 per cent.; *B*, *B'* and *B"*, six cases between + 11 and + 39 per cent.; *C*, *C'* and *C"*, ten cases between — 40 and — 11 per cent.; *D*, *D'* and *D"*, sixteen cases above + 60 per cent.; *E*, *E'* and *E"*, four cases between — 10 and + 10 per cent.

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10. Peabody, F. W.; Sturgis, C. C.; Tompkins, E. H., and Wearn, J. T.: Epinephrin Hypersensitiveness and Its Relation to Hyperthyroidism, Am. J. M. Sc. **161:** 508-517, 1921.

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Success in Health Work.—The master key to the door of success in the public health business is *work*. The health officer who consistently works hard will often succeed in much higher degree than the health officer of greater attainments who does not work so hard. Do not be discouraged if your efforts do not result in the establishment of perfect conditions. Get the best results you can and strive for more and better. Be practical; use common sense.—L. L. Lumsden, "Rural Hygiene," *Public Health Rep.*, Nov. 7, 1919.

THE OMISSION OF DRAINAGE FOLLOWING CHOLECYSTECTOMY *

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In proposing, as a routine procedure, the omission of peritoneal drainage following uncomplicated cholecystectomy, a deviation from the standardized technic that the majority of surgeons are as yet unprepared to accept as safe, I wish to make no pretense at the introduction of a new or original idea. Rather is the chief purpose of this paper to point out that the peritoneal toilet commonly used at the conclusion of the operation is not altogether abreast that used elsewhere in the abdomen.

In reviewing the literature, one is impressed by the fact that fifteen or twenty years ago there were numerous contributions by well known men advocating the procedure. Witzel,[1] in 1905, reported a series of 500 cases, in which he closed the peritoneum, with one death, the cause of which was not given. Witzel, unlike many of the men in the earlier days of gallbladder surgery, who made a tight closure, was fully cognizant of the dangers, the chief of which he considered postoperative biliary leakage. To prevent this accident, by means of "the finest Lembert suture," the stump of the cystic duct was whipped over and over, pulling the stump in toward the common duct. The raw surface of the liver and the stump were then peritonealized. "As in ovariotomy, then in appendectomy, and then in cholecystectomy, the technic of the care of the stump is so developed that its burial beneath a smooth peritoneal surface can be followed."

In 1904, Mayo Robson,[2] in his monograph "Diseases of the Gallbladder and Ducts," remarked: "Unless there be oozing, or unless the wound has been infected by pus or gallbladder secretion, drainage may perhaps be thought unnecessary." Robson was unwilling unreservedly to recommend the method. Similarly Moynihan,[3] in his work "Gallstones and Their Treatment," published in 1905, states, "If inflammatory changes are limited to the gallbladder, drainage need not be provided, the whole abdominal wall being soundly closed." In one of his later works,[4] however, while expressing the same opinion concerning drainage, or rather its omisssion, he describes his routine practice of placing a rubber tube in contact with the stump of the cystic duct.

Goldmann,[5] in 1912, in an article based on the work of Rotter's clinic, not only unreservedly advocated closure in the "simple cases," but denounced the indiscriminate use of peritoneal drainage when it did more harm than good. Goldmann reported ninety-five cholecystectomies closed without peritoneal drainage, with one death. The cause of this death was wound erysipelas; necropsy eliminated the possibility of abdominal accident. In this series were three acute cases in each of which there was a gangrenous patch on the free border of the gallbladder; in two cases, there was perforation of the free surface. He recommended closure in empyema and called attention to the inefficacy of drainage in a diffuse spreading reaction. In one of the earlier cases, there occurred an abscess due, as he states, to the fact that he "had not learned his indications." Like Witzel, Rotter considered a special technic in handling the stump of the cystic duct necessary to avoid its reopening. This consisted of two ligatures, one just above the common duct, and one at the point of severance of the gallbladder. The doubly ligated duct was then kinked on itself, the distal ligature being used to maintain the kinked position by tying the end of the duct to its base. The stump was then buried retroperitoneally. When such peritonealization was not possible, drainage was considered necessary. "The rapid convalescence was a joy to watch."

Rotter,[6] defending his position against the adverse criticism of Kehr, drew the analogy of the inverted stump of the appendix, and quoted the experiences of Riedel, Witzel, Hoffmeister and others. Riedel considered "tamponade" not only useless, but harmful.

This unreserved stand in favor of the omission of drainage has not had so prominent a place in our own literature until quite recently, and then by only two men, Richter and Willis. While there seems to be a growing tendency in this direction, the rubber tube or cigaret drain, placed in close proximity to the stump of the cystic duct, still finds the greatest favor, the assumption being that although the need for drainage is infrequent, either of these two drains serves to prevent accidental leakage of bile into the peritoneum.

In 1917, Willis [7] reported thirty-eight cases in which he closed the peritoneum. Willis began omitting drainage because of the infrequency with which postoperative biliary leakage occurred when drains were inserted, and so he came to the conclusion that cases that were benefited by drainage were extremely rare. "A shortened and more comfortable convalescence, and a larger proportion of patients obtaining more permanent relief" were his observations on his cases. In some subsequent experimental work, Willis [8] called attention to the extensive crippling adhesions produced by bile in the peritoneum, and suggested that in the doubtful cases cholecystectomy without preliminary exploration of the gallbladder be performed, avoiding both the biliary soiling and the necessity for drainage. When he has spilled bile, he merely flushes the peritoneum with salt solution and then aspirates the fluid with an electric aspirator.

Bottomley,[9] in a recent communication, called attention to the desirability of dispensing with drainage in a large number of cholecystectomies, and of providing others with drainage for a shorter time, from twenty-four to thirty-six hours. Oozing and contamination of the field with the contents of an infected gallbladder are taken as indications for drainage for a short time.

C. H. Mayo [10] recently stated, "More and more I am closing the abdomen without drainage, in only a few instances satisfying my old inclination to drain by leaving the double strand of catgut attached to the liver

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where the fundus was separated from it and continued in a suture down to the cystic duct. This catgut is brought out of the abdomen, but the abdomen (peritoneum, muscle, fascia, skin) is closed tightly around it." In this connection, a modified type of drainge suggested by Doyen [11] is interesting. Doyen suggested that the peritoneal sheath of the gallbladder be sutured to the abdominal wall, a marsupialization, thus making the entire operative field extraperitoneal. A glass tube is left in the abdominal wall down to the sheath.

My own experience with the method dates back to the technic H. M. Richter instituted in his clinic in Wesley Memorial Hospital in 1916. In his clinic during the last seven or eight years, he (Richter) has laid special emphasis on the harm done by unnecessary drainage of the peritoneum, particularly in perforated duodenal ulcer [12] and following cholecystectomy.[13]

In 1916, following the removal of a gallbladder for stones, Richter phenolized the cystic duct stump, much in the fashion that we formerly treated the stump of the appendix. This patient and the patients in several subsequent cases so treated made uneventful recoveries. Then believing that the phenol was unnecessary, we iodized the stump in a few cases only later to abandon the use of any antiseptic on the stump as needless.

NECESSITY FOR PRECAUTION

It is recognized, however, that certain dangers other than operative accidents complicate the operation of cholecystectomy. Therefore, in proposing a method, the very application of which may, on theoretical grounds, appear to court the gravest of these dangers, the surgeon must proceed along fundamentally well grounded lines.

First, it may be said that the peritoneum may be exposed to the possibility of infection from the stump of the cystic duct, or occasionally from the gallbladder, in which a preliminary exploratory incision has been made. Second, there may be postoperative biliary leakage from the stump of the cystic duct. Third, there may be a dangerous amount of bleeding from the raw surface of the liver. Fourth, there may be biliary leakage from the gallbladder bed. In view of these possibilities, therefore, most men institute peritoneal drainage as a routine procedure, the type and amount of drainage varying with the individual operator, some using a gauze tampon, others using a small rubber tube or cigaret drain. It is a common practice to secure the drain in such a way as to hold it in close contact with the stump of the cystic duct.

In the usual cholecystectomy in which the gallbladder is unopened, peritoneal soiling is certainly very slight, and I believe that the majority of surgeons would be more inclined to remove a doubtful organ than make an exploratory incision as a preliminary to removal. But even in such an event, the peritoneum can adequately be protected by packs. The infection of the usual chronically infected gallbladder in which cholecystectomy is indicated is of a low grade. Diffuse peritonitis from such a source need not be feared. We do not regard the spilling of bile during the course of the operation as an indication to drain. Furthermore, Richter has, on several occasions, spilled bile and pus, and then tightly closed the peritoneum without untoward results, feeling that it is the continuous reinfection rather than a single soiling that is dangerous. The mucous membrane of the duct in the chronic cases is likewise benign from a bacteriologic standpoint. Bacteriologic smears made from the stump of the cystic duct show an average of an occasional organism or two per field. The actual amount of the mucous membrane that is exposed is very small, and surely much less than that of a ligated appendiceal stump which we know may be left uninvaginated in the peritoneal cavity with impunity.

The postoperative escape of a quantity of infected bile within the peritoneum might easily result fatally. It occasionally happens, following gallbladder removal when drainage has been used, that there is a variable amount of biliary leakage along the drain, and it has frequently been pointed out that such leakage may first make its appearance several days after operation. The fact that such leakage may only occasionally occur has been used as an argument against the routine omission of drainage, even in the simple cases, a most valid argument if the same tendency to leakage is present when the drain is omitted.

It seems most probable, too, that postoperative biliary leakage in these cases must be due to the contact between the drain and the stump of the cystic duct. It is a common practice to use the ligature with which the duct has been ligated, as a means of holding the end of the drain in close contact with the stump of the duct. The infection introduced by the drain is most likely responsible for the failure of the cut surface to heal. The analogy may be found in a suture line in the bowel which may be endangered by the close contact of the drain. I have called attention to the fact that numerous men have suggested various types of special attention to the stump of the duct to prevent its reopening, such as double ligating, or double ligating and angulating the duct sharply on itself and also burial of the stump behind the peritoneum.

TECHNIC

In the technic suggested by Richter, a very fine catgut is used, a No. 1, or, if the No. 0 has sufficient strength to prevent its breaking, we prefer that. The pressure in the common duct amounts to from 200 to 500 mm. of water, very much less than the blood pressure of the average individual. There is no need, therefore, in order to insure permanent closure of the duct, to use a ligature heavier than that which would be more than ample for the carotid or the femoral artery. Extra heavy catgut, kangaroo tendon, or heavy nonabsorbable material, such as braided silk or linen, carries with it the objections that characterize the use of foreign material in an infected field. We use a single ligature, which, tied with sufficient force to obliterate the lumen, probably does not function more than a few hours. As yet we have not had to reopen an abdomen for an accumulation of bile. The peritoneal coat is then enabled to seal the duct.

We do not "peritonealize," a phrase of technic given a prominent place in the literature of the subject. This peritonealization consists essentially in suturing the serous flaps over the gallbladder bed and in placing the stump of the cystic duct behind the peritoneum. In a recent contribution, Richter,[14] reviewing the work of Willis, referred to this peritonealization recommended by Willis as constituting a "peculiar basic error." Basing his practice on the well known capacity of the

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13. Richter, H. M.: Surg., Gynec. & Obst. 29: 455 (Nov.) 1919.
14. Richter, H. M.: Surgery of the Gall Tracts Without External Drainage, Illinois M. J. 39: 256 (May) 1921.

peritoneum for limiting the spread of infection, he (Richter) has felt that the stump can, with far greater safety, be trusted to the peritoneum than to the retroperitoneal tissues where infection usually tends to spread to the proportions of a cellulitis. That the stump can with impunity be so treated, only the more surely proves how nearly free from organisms the mucosa must be, and how little must be the tendency to reopen. It seems to me that nothing more clearly emphasizes this point than the fact that the greatest factor of succcess in intestinal surgery is the peritoneum.

Persistent bleeding from the gallbladder bed is of rare occurrence except in jaundiced patients. In the removal of the gallbladder, we begin at the fundus, incising the peritoneal reflection and freeing the gallbladder from the liver by gentle blunt dissection with the finger. A pack is held by an assistant against the raw surface as the gallbladder is stripped away, and usually by the time the artery and duct have been ligated and cut, the oozing has stopped. I believe that spending an extra few minutes for the purpose of so controlling hemorrhage is time well spent if it will avoid the necessity of leaving a pack in the peritoneum. When, however, such bleeding is excessive, or when it fails to subside within a reasonable length of time, it demands the factor of safety offered by a gauze pack.

Leakage of bile from the raw surface of the liver is not common. It has not been necessary in our experience to drain because of such occurrence. Following the method of hemostasis suggested, the raw surface is absolutely dry. We do not attempt to do anything with the raw surface of the liver.

EXPERIMENTAL STUDIES

With the purpose of studying the effect of drainage in experimental animals, during the last few months, I have performed forty cholecystectomies on dogs, in each case removing a normal gallbladder. In the first twenty-five dogs, following the typical operation, the stump of the cystic duct was ligated with a No. 1 catgut. The ligature, left sufficiently long, in each case was used to keep the drain in contact with the stump of the cystic duct by means of a suture. In the first eight, cigaret drains were used; in twelve, rubber tubing having an outside diameter of one-fourth inch or a little more, was used. In five, a strip of dry gauze was inserted with the tube down to the stump of the duct. In the series, one dog died immediately after operation; a second died of peritonitis, and a third tore open his wound and had to be killed. There were several other wound infections.

The animals were carefully watched for a week or more for evidence of postoperative biliary leakage. To supplement inspection, the drains were removed after four to six days and tested chemically for bile. None was found.

In a second series, ten dogs were drained with rubber tubing after the duct had been ligated with heavy linen or silk. My purpose here was to determine whether nonabsorbable material would be more frequently followed by leakage than catgut. In five animals, a tight closure was made. In none of the second series was there leakage.

A characteristic feature at necropsy was the extensive adhesions in the upper abdomen, in spite of the fact that a relatively small incision was made and the minimum of peritoneal trauma was inflicted. This, of course, our clinical experience with secondary operations on the gall tracts verifies. The five controlled animals showed adhesions also, but they were fewer in number and not so heavy.

It may be argued here that the analogy with the human in whom cholecystitis is present is not exact, because of the absence of infection, but observation of the drain tract after removal of the drain makes me believe that the conditions about the stump of the duct are essentially the same. Positive deductions cannot, of course, be made from such a small series of experiments, yet, I believe that a ligated cystic duct within the peritoneum is almost absolutely safe. I had expected to produce occasional leakage, at least, in this work. Failing to do so, I am led to the conclusion that even under such unfavorable conditions as those introduced by the drain, namely, large foreign body and infection, the duct normally tends to heal.

It is necessary, of course, to remark that indications and contraindications for omitting peritoneal drainage must ever be present in the mind of the operator. When a cholecystectomy is complicated by other operative work on the gall tracts, for jaundice or cholangeitis, conditions for omitting drainage would not be considered favorable, although we know that the drain functions but little, as far as the peritoneum is concerned. The necessity for biliary drainage carries with it the necessity for peritoneal drainage. Recently, Richter [15] drew attention to the possibility of a safe closure of the common duct following choledochotomy, eliminating the need for both biliary and peritoneal drainage.

HARM FROM UNNECESSARY DRAINAGE

A discussion of this subject would not be complete without recounting the harm done by the unnecessary drainage in these simple cases. First of all, the postoperative convalescence of cases in which the abdomen has been closed is much easier, and more rapid. Postoperative pain, nausea, and other evidence of peritoneal reaction are reduced. There is no question but that the drain is responsible for most of this, and we are all familiar with the relief that comes with the removal of the drain. It occasionally happens that while the peritoneum may be closed, complete closure of the abdominal wall is not advisable because of the likelihood of an infected wound. In these cases, drainage of subcutaneous fat or fascia causes less discomfort than peritoneal drainage.

The incidence of postoperative hernia is, of course, reduced to a minimum by tight closure of the peritoneum, and hernia is by no means infrequent following drainage for operations on the gall tracts. The omission of drainage is by no means an absolute method of avoiding accidental wound infection, but such wound infection is no more frequent than in any other clean abdominal wound.

Lastly, a word about peritoneal adhesions. The futility of corrective operative procedures aimed at the removal of adhesions is a matter of common knowledge. That dense and crippling adhesions out of all proportion to the original disturbance occur is also quite generally admitted. I believe it not unlikely, that as we continue in an increasing number of cases to avoid peritoneal drainage, the number of cases presenting recurring or continued distress will diminish.

104 South Michigan Avenue.

15. Richter, H. M., and Buchbinder, J. R.: The Omission of Drainage in Common Duct Surgery, J. A. M. A. **73**: 1750 (Dec. 6) 1919.

ABSTRACT OF DISCUSSION

DR. JOHN L. YATES, Milwaukee: A satisfactory solution of the question of drainage after cholecystectomy can be found in a consideration of the postoperative intraperitoneal reactions. Removal of a gallbladder by the usual technic leaves a portion of the liver surface denuded of its capsule. This denuded area will secrete bile until it is covered with an impermeable layer of fibrin. Fibrin is deposited more rapidly in the presence of a foreign body, like a drain, than otherwise. Careful observation of the discharge in drained patients shows that bile is present for a day, often for two days. Bile is an irritant to the peritoneum and causes a profuse serous exudate and much more diffusion if undrained than if drained. No such thing as complete surgical asepsis is possible, and, moreover, innocent-looking gallbladders and ducts can contain virulent streptococci. The proposition is perfectly definite. Bile is going to be excreted into the peritoneal cavity from any denuded surface of the liver and produce a regional peritoneal irritation for a day or more. Bacteria, occasionally virulent bacteria, are found to be present within the zone of reaction. If a soft cigaret drain is placed so as to extend from the stump of the cystic duct up along the denuded liver and brought out through a lateral stab wound, much has been accomplished for the patient and little done that is disadvantageous. Most of the bile will be delivered outside the abdomen, the area of irritation will be restricted, and the total amount of peritoneal reaction will be reduced. If the drain is surrounded with omentum and removed early, the adhesions are not dense, are in effect parietal in location, and transient. Healing of the surgical incision is not affected so that the total disability, distress and danger are reduced by drainage used. No need to argue that the majority of people recover from cholecystectomy without drainage. The ninety-ninth and one hundredth patient are the ones to try to protect.

DR. JOHN T. BOTTOMLEY, Boston: We are not yet warranted in going on record as saying that all cases of even simple cholecystectomy may be closed without drainage, though I am sure a large proportion of them may be so closed. There is an unavoidable mortality with cholecystectomy either with or without drainage. In the development and evolution of surgery of the abdomen the tendency has been away from drainage and toward nondrainage. Even in perforated duodenal and gastric ulcers, when the case reaches the surgeon early, there is no particular reason for drainage; yet not all such cases may be closed without drainage. Similarly, not all cases of simple cholecystectomy may be closed without drainage. There is no question that, when drainage is unnecessary or unindicated, it is harmful. I believe that much will be granted. When drainage is instituted in the gallbladder region, it certainly promotes the formation of adhesions and it increases the liability to postoperative hernia in a place where postoperative hernia is difficult to cure. The postoperative course in cases in which drainage has been omitted is far more comfortable than in the drained cases. Again, when you use a drain, there is always the chance of infection from without inward. On the other hand, Willis has proved by experiment that in cholecystectomies without drainage the formation of adhesions is almost negligible; we know that in the absence of drainage there is very little danger of postoperative hernia and no danger of infection from without. Forrest Martin took cultures from the cut end of the cystic duct before he cauterized it, and he frequently found colon bacilli and even streptococci; yet he did not hesitate to close the abdomen in such cases, and convalescence was uneventful. A few cases should be drained. I close without drainage from 60 to 65 per cent. of simple cholecystectomies, when the common duct is unobstructed; but in the remaining 35 or 40 per cent. I put in a drain for from twenty-four to thirty-six hours. In doubtful cases I still drain. A drain can be put in through a stab wound, can be started early and be taken out entirely in from twenty-four to forty-eight hours. I have yet to see any drainage of bile in the drained cases. The gist of the matter is that nondrainage of simple cholecystectomies can be carried out in a very large proportion of cases, but it must be applied with common sense and judgment in the choice of cases.

DR. EDWIN BEER, New York: My inclination is to agree with Dr. Yates. Very few cases ending fatally are put on record. Fifteen years ago one of my assistants witnessed operations of this type in the clinic of one of the master surgeons of Berlin. The next day he saw three patients in the necrosy room with the abdomen full of bile. Nobody ever hears of the bad results, and no doubt bad results do happen from leakage in some cases which do not appear in the records. There is no doubt that you can tie off the cystic duct in simple cases without extensive leakage, but who can tell when leakage will occur? What is a properly performed cholecystectomy? It is removal of the gallbladder and exploration of the common duct. Everybody who palpates the common duct runs the risk of getting a swelling and increased tension in the biliary system which may cause leakage at the tied off biliary duct. The fundamental physiologic problems are altogether different.

DR. JOSEPH C. BLOODGOOD, Baltimore: It has been my rule not to drain after the removal of the gallbladder unless the common duct is opened. Then I have drained the common duct. Recently I have adopted Halsted's suggestion—close the opening in the common duct and drain with a small tube in the cystic duct. I have found drainage unnecessary after the removal of the gallbladder, except in a few cases, because I do not remove the gallbladder until I have demonstrated that the cystic duct can easily be exposed. In removing the gallbladder I divide its peritoneal coat some distance from the liver, separate the gallbladder subperitoneally until it is attached only by the cystic duct and artery. The artery is ligated separately with silk, the cystic duct with silk and chromic catgut. These ligatures do not include the peritoneal cuff which is stripped back. The cystic duct is divided with the cautery, and the peritoneal cuff is allowed to fall over the ligature, but is not sutured. These undrained cases have all done well. In a few cases drainage has been introduced, because in stripping the gallbladder from the liver oozing surfaces were unavoidably made. As a rule, I have drained with one piece of rubber dam, brought out of the outer lower angle of the wound when made through a lateral incision, or through a stab wound in the side, when the incision has been through the right rectus. In a few cases I have also used a piece of iodoform gauze because the wound of the liver exhibited a great deal of oozng. In my own cases I have never observed leakage of bile, nor postoperative hernia. In following up these cases, there is apparently no difference in the results between the drained and the undrained cases. I have no evidence that proper drainage adds to the risk of the operation, or to the occurrence of postoperative adhesions or of hernia. I am inclined to the opinion that when the operator is in doubt, drainage should be instituted. From a study of the literature and from personal communication I am inclined to the opinion that the danger of the removal of the gallbladder is not due to drainage, but to injury of the common duct, or removing the gallbladder when it is impossible, or difficult to ligate the cystic duct properly. If I should remove a gallbladder and feel that the cystic duct could not safely be occluded by ligature, I would follow Halsted's suggestion and introduce and suture a small tube into the cystic duct. This would prevent leakage of bile until the wound had healed. Leakage of bile due to the faulty ligature of the cystic duct is associated with more local peritonitis and, therefore, more postoperative adhesions and leads to the breaking down of the abdominal wound and postoperative hernia.

DR. JACOB R. BUCHBINDER, Chicago: It is, of course, impossible to complete the arguments pro and con. One must select one's cases. We cannot indiscriminately close the abdomen after every cholecystectomy, but, following the usual chronically infected gallbladder, when cholecystectomy has been done, we may close without drainage where infectivity is of low grade, and by closing without drainage we lessen the likelihood of biliary leakage. After a gauze pack has been held against the liver for twenty or thirty minutes, the liver surface is dry, although it is quite conceivable that a small

amount of postoperative biliary leakage from the liver may occur. We have surmised on the second or third day where a little postoperative rise in temperature had occurred that there had been some such leakage, but the amount of such leakage never struck us as being an item of danger. Concerning postoperative leakage from the duct: diffuse peritoneal infection from bile would be a serious complication, but this leakage of bile is certainly much more likely to occur if there is a foreign body near or in the vicinity of the cystic duct than if the peritoneum is left clean. In regard to suture and size of drain: There is no foreign body, no matter how bland or smooth, that can be put into the peritoneal cavity without exciting adhesions. Since the foreign body is apt to excite biliary leakage, drainage with a foreign body is bad. However, to drain is a source of discomfort, not a source of danger, but it helps to make a smooth postoperative course.

PARALYSIS IN CHILDREN DUE TO THE BITE OF WOOD-TICKS*

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Paralysis in children following the bite of wood-ticks, while not unknown to the medical profession, has not been sufficiently described in the medical literature accessible to American readers. As a result, most physicians are ignorant of the occurrence of this condition and, consequently, fail to consider this origin of paralysis when making their differential diagnoses.

HISTORY

In 1903, while I was making an examination of a woman, aged 22, suffering from an almost complete motor paralysis of the extremities; a large wood-tick was found in the skin at the tip of the spine. Immediately following its removal, improvement in the patient's condition began, continuing to complete recovery. At that time search of the available literature disclosed no reference to similar cases. In the last eleven years, ten cases of paralysis in children due to tick bites have come to my attention. A recent search of the literature regarding this disease has been productive of considerable information.

Borthwick,[1] in 1905, reported paralysis in sheep occurring over a large area of Cape Colony, which the sheep farmers had long recognized and attributed to the bite of a wood-tick. Temple,[2] in 1912, reported from eastern Oregon four cases of his own, and nine of other physicians, of acute ascending paralysis in children, from the same cause. Both of these are reported in condensed form by Nuttall.[3] In 1912, Todd[4] sent letters to physicians in British Columbia asking them if they had met with cases of illness which had been ascribed to tick bites. The object of his request was to ascertain if Rocky Mountain spotted fever, which was prevalent in Montana, and attributed to wood-ticks of a type found also in British Columbia, existed in western Canada. In the replies, nine cases of tick bites in children, followed by paresis, paralysis, and, in some cases, by death, were reported. In later articles, Todd[5] reported two additional cases of this illness in children. He requested ticks from active cases for examination, and gave a review of the literature. Bishopp and King,[6] in 1913, reported cases occurring in Montana, and at the same time Hadwen[7] visited British Columbia to investigate the occurrence of paralysis in sheep in that district. During his visit, he found no paralyzed sheep but did find a large tick embedded in the back of one. This finding, together with his recollection of published cases of curious paralysis in children where ticks were found attached to the back, gave him the idea that the condition might be caused by tick bites. With ticks collected in this locality, he was able to produce the disease experimentally in sheep.[8] Later a case of paralysis in a child was described by Strickland in Australia.[9]

ETIOLOGY

Adults are rarely affected, practically all cases reported being in children. Adults undoubtedly find the ticks easily and brush them off, which probably explains the lower adult morbidity. Many mothers in our vicinity who take their children to the lakes for the summer frequently examine the bodies of their children for ticks, and often their search is rewarded by finding them, usually in the scalp. The tick season may begin as early as February, and may last until August.

Southern British Columbia, eastern Washington and Oregon, Idaho and Montana are the usual localities. Cases are also reported from Cape Colony and Australia.

Among sheep it has been noted that it is the yearlings alone that become ill, older sheep having acquired an immunity. No record of second attacks in either man or animal has ever been found.

EXCITING ETIOLOGY

The wood-tick most commonly found is *Dermacentor venustus*, which is also responsible for the transmission of Rocky Mountain spotted fever. In sheep the ticks are usually located along the spine, but in man symptoms result from ticks embedded in the axilla, ear, temporal region and the occiput. In animals, ticks are found on the healthy as well as on the affected, and the number of ticks on a subject does not seem to influence the severity of the paralysis, one tick producing the same effect as many. A few cases in man are reported in which multiple ticks were removed. The male ticks attach and detach themselves easily and frequently, and it is not known whether male ticks can produce paralysis in the absence of the female. Experimentally, paralysis has always been produced through the agency of tick bites, but it has been impossible to transmit the disease by inoculations; no parasite has been found, and bouillon cultures from diseased animals have remained sterile. This is well illustrated by the following experiments of Hadwen[7] and Hadwen and Nuttall:[8]

1. Tick transmission: Total paralysis occurred in a lamb on the eighth day after attachment of the tick.

2. Attempt to transmit from lamb to lamb by inoculation: Inoculations of material from brain, spinal cord and cere-

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* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Borthwick: Tick Paralysis Affecting Sheep and Lambs, Vet. J., London **7**: 33, 1905 (abstract of report to chief veterinary surgeon, Cape Government).
2. Temple, I. V.: Acute Ascending Paralysis, or Tick Paralysis, M. Sentinel, **9**: 507, 1912.
3. Nuttall, G. H. F.: "Tick Paralysis" in Man and Animals, Parasitology **7**: 95, 1914.
4. Todd, J. L.: Canad. M. A. J. **2**: 686, 1912; **2**: 1118, 1912.
5. Todd, J. L.: Canad. M. A. J. **4**: 825, 1914; **9**: 994, 1919.
6. Bishopp, F. C., and King, W. V.: Additional Note on the Biology of the Rocky Mountain Spotted Fever Tick, Ecen. Entomol. **6**: 200, 1913.
7. Hadwen, Seymour: On "Tick Paralysis" in Sheep and Man Following Bites of Dermacentor Venustus, Parasitology **6**: 283, 1913.
8. Hadwen, Seymour, and Nuttall, G. H. F.: Experimental "Tick Paralysis" in the Dog, Parasitology **6**: 298, 1913.
9. Strickland, C.: Note on a Case of "Tick Paralysis" in Australia, Parasitology **7**: 379, 1914.

bellum of the affected lamb produced no paralysis in the second lamb. Repetitions of these inoculations were uniformly without result.

3. Tick transmission: Paralysis occurred in a lamb on the eighth day after attachment of the tick. Improvement began on the ninth day, and recovery was complete on the twelfth day, without removal of the tick. Necropsy findings after killing the sheep were negative.

4. Experimental inoculation with mashed ticks: Susceptible animals were inoculated by both engorged and unengorged ticks without results.

5. Experiments with guinea-pigs with the following negative results: (*a*) Inoculated along the back with a few drops of fluid from mashed ticks; (*b*) Intraperitoneal injection of 2 c.c. of defibrinated blood from a lamb experimentally paralyzed; (*c*) Inoculated subcutaneously with brain emulsion.

6. Death observed in guinea-pigs on the fifth to seventh day following the application of Dermacentor venustus larvae and nymphs (young ticks).

7. Paralysis observed in a dog nine days after attachment of a single *Dermacentor venustus*. Complete recovery occurred on the sixteenth day, though the tick was not removed until the eighteenth day.

PATHOGENESIS

The exact nature of the disease has not been determined. In favor of the infectious theory is the incubation period of from six to eight days, which has been determined in the animal experimental work. Opposed to this explanation is the usual absence of fever and the negative results of inoculation. On the hypothesis that the disease is infective, Hadwen and Nuttall state that the negative results which follow the experimental use of the prematurely removed ticks may be explained on the ground that the hypothetic infecting parasite undergoes development in the tick while the latter is attached to the host, and that the pathogenic parasite only enters the vertebrate host after the tick has remained attached for some days. The paralysis may, on the other hand, be explained as resulting from toxins absorbed from the ticks and elaborated, especially at the time when engorgement is complete. To strengthen the toxic-absorption theory, the period of incubation might be explained on the assumption that it is only when the tick begins to engorge or feed rapidly, some days after it has become attached, that it gives off sufficient hypothetic toxin in its saliva to produce pathogenic effect.[8] No doubt both man and animals affected have been exposed to previous tick bites without symptoms, but an anaphylactic origin seems to be disproved since one attack seems to confer a lasting immunity; if the origin were anaphylactic, there would be multiple attacks after sensitization had occurred.

PATHOLOGY

At the point of attachment of the ticks, subcutaneous hemorrhages are found and the blood seems to have partly lost its power of coagulation. The hemorrhages have some resemblance to those seen in hemophilia. About the tick is deposited a dark reddish patch of excrement. At necropsy, in animals dying from this paralysis, slight congestion of the brain and cord has been found by some observers.

SYMPTOMS

The symptoms are usually characterized by the sudden onset, in a previously healthy child, of weakness in the muscles of the extremities, staggering, difficulty in standing, and disinclination to active play, rapidly followed, in a few hours, by more or less complete motor paralysis. The child is often unable to stand, hold the head erect, or feed himself, although consciousness is not impaired. The onset may be accompanied with convulsions. The incubation period in children is doubtful, but, by experiments in animals, it is found to be from six to seven days after the ticks are attached. Rapid pulse and a slight rise of temperature have been noted. A large engorged wood-tick is found somewhere on the body, most often in the scalp, occasionally in the external ear, the axilla and other protected areas.

REPORT OF CASES

The following case histories of patients whom I have seen, together with short reports of cases given by physicians in this locality, are illustrative. My cases are given herewith:

CASE 1.—Miss H., aged 22, of Hillyard, Wash., seen in 1903, gave a negative family and personal history. This robust young woman had been unable to walk or stand for a period of three weeks. She could not feed herself, and held up her head with great difficulty. During the routine of a complete physical examination, a large wood-tick was found embedded in the skin over the coccyx. The tick was removed, but no prognosis was given. In a few days she was entirely well.

CASE 2.—Baby B., aged 2 years, of Mullan, Ida., seen in June, 1909, gave a history of sudden inability and unwillingness to use the lower limbs. On questioning as to wood-tick bites, the mother stated that she had removed a large tick from the scalp just before coming to the office. Examination disclosed nothing but an apparent complete paralysis of the legs. The child was well the following day.

CASE 3.—C. S., a boy, aged 1 year and 10 months, seen in July, 1917, was referred by Dr. Barnhardt of Spokane, Wash. Family history and all personal history was irrelevant. The child was brought with a complaint of sudden great difficulty in walking. He had spent several days at a nearby mountain lake. The first morning at home, he refused to walk, revealed a peculiar activity of his hands, was awkward and could scarcely handle his toys. The boy was well nourished; the feet were slightly swollen from sunburn; the heart, lungs and urine were negative. He was normal except for an inability to walk, and the fact that he would not pick up objects from the floor. Mentally, he seemed very inactive. Heat and cold sensations were normal. A large wood-tick was discovered attached to the scalp in the right temporal region. Inside of twelve hours after removal of the tick, the boy was able to walk about the room. The next day he had completely recovered.

CASE 4.—K. L. D., aged 4 years, seen in August, 1917, was referred by Dr. H. P. Marshall, Spokane, Wash. Nothing in her previous history bearing on the case presented itself except the fact that she had always been very active and extremely nervous. She lived in a small "jack" pine grove. Four days before onset, the child had loss of appetite, with some abdominal pain and great restlessness. She had been given very drastic treatment for suspected worms. Dr. Marshall was called because of severe pains in the knees and an absolute inability to stand. The child appeared very well nourished. She had pain in the legs and refused to try to stand. The hands and arms were normal. A large wood-tick was found in the scalp above the left ear. On the sixth day after removal of the tick, the pains in the legs and the inability to stand had disappeared and the child was normal, except for the appearance of an enlargement of the glands of the neck.

CASE 5.—E. L., a boy, aged 3 years and 6 months, of Cocolalla, Ida., seen in August, 1918, gave a negative family and previous personal history. Seven days before, he had retired in good health, but next morning could not walk. Generalized weakness of the muscles increased in severity to the time of examination. He was unable to hold his head erect and had great difficulty in feeding himself. An unsuccessful search for a wood-tick was made; the head was then shaved and

well cleaned, and a small wound, similar to that in other wood-tick cases, was found and cauterized. Cathartics, baths and other methods of elimination were used. The mother reported that she had found several wood-ticks on this child during the spring, but that he had had no symptoms at that time. The spinal fluid was negative. The next day the mother reported that the child was walking much better. His further improvement was very slow and he did not begin to walk well for five weeks and was very weak for some time. In June, 1920, the mother reported the child as well, except for a slight difficulty in the use of his left hand. From the history, the course of the case, and the finding of a wound in the scalp, it was assumed that a wood-tick had caused the symptoms, and after engorgement had loosened its hold and had fallen off. I recognize the possibility that this may have been a case of atypical infantile paralysis.

CASE 6.—Q. R., a girl, aged 5 years, of Spirit Lake, Ida., seen in May, 1919, whose family history was negative, after an 8 mile walk in the woods, had complained of being very tired, and had cried with an ache in the legs during the night. The next morning she could not get out of bed and, even with assistance, could not stand; but she seemed well when in bed, sang, played, and ate heartily. She could not put her feet to the floor because of pain, and could not stand; the head dropped forward or backward; she could not speak plainly, and had some difficulty in swallowing. The picture was the most pathetic of all I had seen. A large wood-tick was found over the occiput. The child gradually improved after the tick was removed, and was entirely well in about one week.

CASE 7.—M. B., a girl, aged 8 years, of Vera, Wash., seen in May, 1920, was referred by Dr. Barnhardt of Spokane, Wash. The family history was negative. Four days previously, the parents noticed that the child was unusually nervous, but as she was just recovering from measles, little anxiety was aroused. Later she was dizzy, staggered around her room, and dressed herself with difficulty. Speech was disturbed, and she seemed irrational at times. The left eyelid was swollen and inflamed. She had a staggering gait with weakness of the lower extremities. A tick was found in the right axilla. It was detached by the use of chloroform, and immediate improvement began. About the attachment of the tick there was an ecchymotic spot about one-half inch long and one-quarter inch wide. The skin and subcutis were necrotic to a depth of about one-quarter inch. This area was curetted and cauterized. The highest elevation of temperature noted was 99.4. The blood was normal except that there was a leukocytosis of 13,400, of which 11 per cent. were eosinophilic cells. The tick was sent alive to Dr. H. Gideon Wells of the University of Chicago, who found it to be an impregnated female resembling *Dermacentor venustus*. The tick attached itself to a guinea-pig, and on the sixth day moderate fever and decreased capacity to use the hind legs were observed. Necropsy revealed nothing to explain this condition. Inoculations from the first pig were unsuccessful in a second lot of pigs. These findings confirm those of Hadwen.

CASE 8.—N. G., a girl, aged 5 years, of Libby, Mont., in May, 1921, was referred by Dr. Stenberg of Spokane, Wash. The family history was negative. May 25, 1921, the child complained of being sick, and could not stand. May 26, the paralytic condition continued the same, with the addition of great difficulty in breathing. May 27, she was sent to Spokane, a diagnosis of infantile paralysis having been made. The child was paralyzed in both arms and both legs, and the reflexes were absent. She could not talk or swallow, and was in a semistupor. An engorged wood-tick was immediately found and removed from the scalp. The breathing became more shallow, the pulse very irregular and at times absent. The child died of bulbar paralysis fourteen hours after the removal of the tick. Necropsy was not permitted.

The following cases were reported to me by physicians in this vicinity.

Dr. W. C. Lindsay, Kellog, Ida.: In July, 1917, a previously healthy boy, aged 7 years, was unable to get out of bed or to stand. He was prostrated, the temperature was subnormal, the legs were cold, the pulse was fast and thready, and he vomited. The lower limbs were flaccid, and sensation was normal. He was treated as a case of gastro-intestinal intoxication, but became rapidly worse. Accidentally, a tick was found in the occipital region in the center of an inflamed area, 2 inches in circumference. The tick was removed, and the area aseptically treated. Next day the boy was well. The incubation period in this case was apparently three days, estimating from a single exposure in the woods.

In April, 1920, a girl, aged 9 years, was recovering from tonsillitis. On arising one morning she was unable to stand, was dizzy, and vomited. Throughout the scalp and on her pillow were found small dark particles like fine coal dust, which probably consisted of coagulated blood and tick excrement. A large wood-tick was found in the scalp. The recovery was quite slow in this case, possibly because the incubation period had been unusually long, nine days' duration being reasonably certain.

Dr. C. E. Worthington, Coeur d'Alene, Ida.: A girl, aged 4 years, died two hours before the physician reached her home. She had been drowsy after the noon meal, and could not join the other children in their play during the afternoon. She had had no appetite for dinner. In brushing her hair a large wood-tick had been discovered and incompletely removed, the mother allowing its head to remain in situ. During the night she was found dyspneic, and soon died.

A girl, aged 6 years, refused her breakfast. She seemed dazed and could not walk steadily. She was pale, and the pupils were dilated. A tick was found embedded in the scalp. Recovery was complete seventy-two hours after the removal of the tick. In neither of these cases could an incubation period be determined.

Dr. L. J. Stauffer, Rose Lake, Ida., reported a case from Kalispell, Mont., in which a large wood-tick was found, during burial preparations, in the scalp of a little girl who had died from an obscure paralytic disease.

Dr. C. J. Kinsolving, of St. Maries, Ida., which is situated in a tick-infested valley in the mountains along the St. Joe River, reports a large number of tick bites with symptoms, but has never seen paralysis resulting. His patients have shown vomiting, fever, prostration, loss of appetite and other general symptoms of an intoxication.

I am of the opinion that if a thorough survey were made among the physicians of Idaho, Montana, eastern Washington and Oregon, and British Columbia, an enormous number of these cases could be collected.

PROGNOSIS

Recovery is usually complete and rapid following the early removal of the entire tick, most of the children being normal within forty-eight hours. Occasionally where the tick is not removed entirely or is removed after an extensive paralysis has occurred, death may follow from respiratory failure. I know of cases in which children with paralysis of obscure etiology have died, and in the preparation of the body for burial, wood-ticks were found in the scalp.

It is not positively known, in cases of tick paralysis in man, whether recovery can take place without removal of the tick. In sheep, however, the disease may be of long duration, and recovery is not absolutely dependent on the removal of the tick. A case is reported by Hadwen[7] of a shepherd carrying a paralyzed lamb all summer from camp to camp, with total recovery finally occurring, no tick having been removed.

DIAGNOSIS

The physician usually realizes that he is dealing with an acute progressive extensive motor paralysis, which, from its course, presents a picture of extremely unfavorable prognosis. He attributes the paralysis, with little confidence in his diagnosis, to poliencephalomye-

litis, meningitis, or to an acute intestinal intoxication, without manifest evidences of an enteritis.

The direct diagnosis depends on the finding of an engorged wood-tick on an individual suffering with sudden paresis or paralysis of the muscles of the extremities, followed by rapid improvement in all symptoms after the removal of the tick unless respiratory paralysis has developed.

The only case in my series in which a complete blood examination was made showed an eosinophilia. This is possibly of great diagnostic importance, being indicative of animal parasitic infection.

TREATMENT

The treatment consists in the removal of the wood-tick. It must be searched for carefully, and is usually to be found buried in the hairy scalp or other protected places. Great care must be exercised to remove the head of the tick, otherwise improvement in the symptoms may not occur. Many ways have been suggested to secure the tick. Gentle traction may be used; the tick may be covered with grease and, when forced to move to breathe, is easily removed; a lighted match may be held beneath the tick until it is too hot for it to remain attached to the skin; or the skin to which the tick is attached may be excised; kerosene and chloroform can also be used to force the tick to loosen its hold.

CONCLUSIONS

1. Bites of wood-ticks, usually *Dermacentor venustus*, can cause a motor paralysis of the flaccid type.
2. The paralysis is acute, extensive, progressive and usually ascending in its progress.
3. In man, children are most commonly affected.
4. Death may occur, usually by respiratory paralysis.
5. Recovery is rapid and complete, following the complete removal of the tick before respiratory paralysis has occurred.
6. Experimentally, tick bites have produced this type of paralysis.[10]

Paulsen Building.

ABSTRACT OF DISCUSSION

DR. E. J. HUENEKENS, Minneapolis: Two thoughts present themselves—first, the similarity to postdiphtheritic paralysis, which would show that there may be an exotoxin, and the rapid recovery after removal of the tick, would also show that this is due to an exotoxin. However, without necropsy findings, we can only speculate. Second, some of these cases may be happening in other parts of this country and not be recognized. In Minnesota there is a tick-infested district.

DR. FRANKLIN P. GENGENBACH, Denver: We have quite a number of cases of wood-tick bites and cases of Rocky Mountain fever in Colorado, and although I have seen children upset by bites of the ticks, I have never had a case of paralysis. However, last fall I received a letter from a woman in Wyoming who reported the death of her 14 months old baby from the bite of a wood-tick. She said that the condition had not been recognized.

DR. JOSEPH BRENNEMANN, Chicago: I wonder how frequent wood-ticks and wood-tick bites are. Does everybody expect to get bitten where they are common? In what proportion of cases do alarming symptoms occur?

DR. PETER D. MCCORNACK, Spokane, Wash.: While visiting in Iowa just before this meeting, I mentioned this subject, and was told of a case of removal of an enormous wood-tick from the scalp of a child. There was no associated paralysis. To further illustrate the widespread distribution of ticks in this country is the history obtained from a woman of a tick removed from her back when she resided in Boston. This spring I requested four girls who were going for a two-day trip in the woods of eastern Washington to collect the ticks which they found on their clothes and bodies. Sixteen ticks were obtained. In our section, most people, while in the woods, examine their bodies for ticks each night before going to bed. Little is known in regard to the paralysis. We do not know exactly what causes the paralysis and why not all tick bites in children are followed by paralysis. Perhaps it is the impregnated female tick alone that is responsible. In the cases in which the tick has been classified, it has been the female.

10. It is requested that live ticks found on paralyzed patients be sent for further study to Dr. H. Gideon Wells, University of Chicago, with a description of the symptoms and such other data as may be of interest to him.

NEEDED MEASURES FOR THE PREVENTION OF DEAFNESS DURING EARLY LIFE*

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Too much attention has been paid to the acute otologic conditions of childhood; too little attention has been paid to the chronic otologic conditions or, at least, to the causative factors which bring about deafness in later life. The cure of an acute suppuration of the ear may mean the saving of a life; but is that of any more importance than eliminating factors which, if left uncared for, will mean the leading of a life of misery? The individual who is kept from the intellectual contact with his fellow men considers himself beyond all others. I have been led to think more of this subject, during the last few years, because of the number of patients I have seen who were suffering from a hopeless progressive deafness which, no doubt, could have been prevented if they had been properly taken care of in early childhood, when some intercurrent infection or one of the exanthematous diseases started the trouble.

The problem of the prevention of deafness in early childhood is both medical and educational. Each of these aspects is of importance to the otologist, who frequently has to advise as to the proper schooling of children and also as to whether a deaf person should marry or not. He should find himself in a position to answer all questions; for on his opinion rests the future happiness and welfare of the individual and his direct descendants.

Deaf children divide themselves into three classes: those who are hereditarily deaf, those who are congenitally deaf and those who have an acquired deafness. The so-called deaf mutes belong to the first two classes and need our attention mainly from the educational point of view. The third class needs our attention both from the educational and from the medical side. Now what is the difference between hereditary and congenital deafness? How many otologists attempt to differentiate between the two? Very few, I am sure; and yet this differentiation is a most important one. Hereditary deafness can be claimed only in those cases in which there is deafness among ancestors in the direct line. One or two generations may have been skipped, but if one makes use of geneological tables, such as occur in the writings of Love,

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Bell and Fay, he will find many cases of hereditary deafness which are directly traceable. Congenital deafness is a deafness which takes place before the child is born, and may be due to a true congenital defect because of an abnormal development, or to syphilis in one or both of the parents. Acquired deafness, on the other hand, comes on after birth, within the first few months or later on in childhood, during the first five years, the result of some febrile disturbances, one of the exanthems or because of certain localized conditions which interfere with the delicate mechanism of the middle ear. Most writers who have studied the subject carefully assert that the majority of cases are the result of neglect of the ears after measles, scarlet fever and meningitis, which may be either of the epidemic type or one of the low grade meningitides so often caused by syphilis. It is a sad commentary on our knowledge of the subject that over 30 per cent.[1] of the inmates of our institutions for the deaf are children who have an acquired deafness which might have been prevented if taken in time.

However, as our problem is a preventive one, our most important task is the prevention of deafness in acquired cases. We may thus divide our subject: (1) prophylaxis of the nose and throat; (2) the removal of tonsils and adenoids; (3) the care of acute non-suppurative and suppurative conditions of the ears; (4) the care of the ears during and after the acute exanthematous diseases, and (5) the more careful treatment and testing of children's ears.

PROPHYLAXIS OF NOSE AND THROAT

An unclean condition of the nose and throat of a child, by which I mean the accumulation of mucus and mucopus, will tend to an engorgement of the eustachian tubes which is likely to result in impaired hearing. One must remember that the acuity of hearing of a child depends on the normal balance in the middle ear which can be maintained only if the tubal muscles are at a proper tension so that the drum and ossicles are automatically massaged with each act of swallowing. It is a simple matter to keep the nose and throat clean, particularly if the child's health is up to par; but one must remember that if the vitality of the child is lowered in any manner whatsoever, be it from some generalized disease or from malnutrition, the problem cannot be handled by the otologist alone. Children with rickets, marasmus or some other devitalizing disease are more prone to troubles in the upper air passages, and such diseases must received proper treatment before local treatment is attempted. Very often there is no evidence of impaired hearing at this early date, which makes it more necessary for one to be on the lookout for trouble. It is because of the history of these devitalizing diseases that one notes that the majority of cases of acquired deafness are among the poorer classes who have not had the opportunity for proper housing or medical care. The prophylaxis of this class of cases is exceedingly simple. The child's general health must first be brought up to par. The local treatment consists in keeping the nose and throat clean, by the use of instillations of mild alkaline solutions by means of a medicine dropper, followed by drops of some soothing oil, like liquid petrolatum. The alkaline solution should be used until the nasopharynx is thoroughly clean, and then the oil is used as a coating on the exposed mucous surfaces. Such cleansing will ward off many an inflammatory condition and may be the means of avoiding a deafness later on in life.

REMOVAL OF TONSILS AND ADENOIDS

The removal of tonsils and adenoids is a question of vital importance, particularly in relation to the subject with which we are dealing. Although there may be controversies galore as to whether tonsils and adenoids should be removed or when they should be removed for the purpose of revitalizing the general health of the child, there should be no question about their removal when any sign of ear trouble occurs. There are many men who believe that, in the course of time, cases of progressive deafness will seldom be seen because of the wholesale removal of tonsils and adenoids. I cannot accept this optimistic view: for although I do believe that they are the cause of many of the ear troubles in early childhood which give rise to deafness in later life, I have seen too many children with ear troubles after tonsils and adenoids are removed to feel that they are always the primary consideration. In fact, sometimes after their removal, the eustachian tubes are so wide open that, unless the child is told how to blow his nose properly, he is only too liable to bring about a condition within the ear which is beyond repair.

Realizing the important part that adenoids play, be they small or large, in interfering with the normal action of the tubal muscle, I feel that they should always be removed if the child has shown any tendency toward ear trouble. The large adenoid, in infants, which is of sufficient size to interfere with breathing or feeding, gives enough evidence of trouble to warrant its removal. But it is the small adenoid, often not pendulous from the vault of the pharynx but springing from the region of the eustachian tube or the fossa of Rosenmüller, which is open to question in the minds of those who have not seen the aftermath, in the form of progressive deafness. No matter how small the adenoid is, no matter at what age it is first noted, be it in the first months of life or during the second or third year, it should be removed as soon as there is any evidence that it is causing trouble, particularly with the ears. Some of these masses may be so small and friable that they can be broken down with the finger without anesthesia, while others will need a more severe operation with the curet under ether narcosis.

As a general rule, the majority opinion is in favor of leaving the tonsils in situ until the second year of the child's life, unless they are found to be directly responsible for systemic disease or have been the seat of repeated local infections. However, one must not lose sight of the fact that the tonsils may cause impairment of hearing because of their close proximity to the eustachian tubes. The elimination of irritants from these tonsils, aside from their direct pressure on the tubes, may cause ear trouble which will be apparent if a suppuration or an inflammatory reaction occurs, but will often not show itself until there is some manifestation of impaired hearing later on. If the tonsils are left in until that time, their removal may or may not cause an arrest of the progress of the condition. In the ordinary case, I think it advis-

1. A test of the hearing of 342 children made at the Institution for the Improved Instruction of Deaf Mutes, New York City showed that 129, or 37.73 per cent., could distinguish words spoken in a loud voice with mouth to the ear; forty-one, or 11.99 per cent., could hear vowels under the same conditions; fifty-three, or 15.49 per cent., were doubtful, and 119, or 34.79 per cent., had no hearing.

able not to remove the tonsils before the end of the second year of the child's life; but if I have any evidence of impaired hearing before that time, I believe that I am erring on the side of safety by removing these tonsils as quickly as possible. Infants who are suffering repeatedly from earaches and who, on inspection of the drum, show evidence of acute inflammatory conditions, children who suffer from prolonged suppuration from the ears at an early age, who have tonsils of large or moderate size, are much better off when the tonsils are removed. Emerson is of the opinion that later on in life the tonsils are responsible for the continuation of an ear trouble, because of the toxic absorption which takes place through the system by the elimination of the products of the bacteria contained therein and because of the chronic localized pharyngitis which arises. If this is so in adults, why is it not equally true in infants when the general resistance is far lower?

ACUTE CONDITION OF THE EARS

Attention to the repeated earaches in children is not as close as it should be. The child is ordinarily seen first by the general practitioner or the children's specialist who, if he is especially acute, is able to determine the amount of local inflammatory reaction. However, he is most often content if the pain, the rise of temperature and the local inflammation subside. How often does he attempt to find out whether the hearing is impaired? I admit that this is a difficult procedure, but it can be done and it should be done. If an otologist is taking care of the case, he is often equally at fault; but in the majority of cases, the otologist is called into consultation once or twice and is never advised of the case after that. No child who has had more than one attack of earache should be allowed to go without a hearing test and, if the hearing is found to be impaired, remedial measures should be started at once. The drums may need but a slight massage, or it may be necessary to do a careful politzerization. Or some causative factor will have to be sought and eliminated.

What has just been said about nonsuppurative inflammatory conditions is even of more importance in those cases in which there has been suppuration. It has been our custom too often, in the past, to be content to clear up the discharging ear. But our duty is but half done. The discharging ear has been an infected ear. Certain deposits have taken place in the tympanic cavity, such as the deposit of fibrin and perhaps inspissated pus which may make an alteration in the hearing mechanism which may be permanent. The eustachian tube may still be inflamed so that no air reaches the middle ear, or else a small perforation, dry and crusted over, may remain unnoticed. These are conditions which can be easily remedied at the time but which are sure to leave their mark, later on, if neglected. Unfortunately, again, the family physician or the pediatrician is satisfied when the suppuration has stopped because it is seldom apparent to him that the child's hearing is sufficiently impaired to need attention at that time. All children's ears should be tested after any suppurative condition, and one should not be satisfied until the hearing has been brought back to as nearly normal as possible. I have had sufficient evidence, in a number of cases, to warrant my feeling that impairment of hearing is frequently present after a suppuration has ceased, and that the hearing can be brought back to normal if proper care is taken. First one must see that the eustachian tube is open. Secondly, he must see, by vibratory massage, that the drum is moving properly. Thirdly, he must be sure that the perforation in the ear drum is properly closed. And fourthly, and of as great importance, he must eliminate all causative factors that will tend toward a recurrence of the condition, such as the removal of tonsils and adenoids, the clearing up of nasal sinus disease, so ably brought to our minds by Dean, and the building up of the general constitutional condition.

One cannot close the question of the acute suppurations of the ears in children without dwelling for a moment on what may be called the conservative mastoid operation. Phillips and others have pointed out that, regardless of the acute symptoms present which would determine us as to the advisability of operating on the mastoid, for the purpose of conserving the hearing, the suppuration must not be allowed to exist for too long a time. Some of these children are allowed to continue with a suppuration for from four weeks to two months; and as long as there are no acute symptoms, such as a rise in temperature, and as long as the child feels perfectly well, nothing is done for ears but periodic douching. If the discharge is mucoid rather than purulent, the tonsils and adenoids are removed, if this has not been done before. In an infant, no signs of deafness will be noticeable. In an older child, the parents or the physician may notice that the child is inattentive. As long as the suppuration continues with pulsation of the drum, there is always the possibility that some part of the mastoid is involved; and just so long is there a possibility that a permanent impairment of hearing will result unless something of a radical nature is done. I have frequently spoken of this in previous papers, and wish to emphasize it again. I consider that any suppuration extending for any length of time, which has been associated with an acute inflammatory process, should be eliminated even if it means the opening up and cleaning out of the mastoid cells. I have yet to operate in the first case of this kind without finding sufficient evidence in the mastoid cavities to warrant my doing so. Once in a while a case like this will clear up of itself; but, invariably, that case will eventuate in progressive deafness. I am at present watching an unruly child who was allowed to continue with a discharge for over two months. The circumstances were such that I could not operate. I am sure that after puberty, the boy will be consulting some one because of his diminution in hearing.

CARE OF EARS DURING AND AFTER EXANTHEMATOUS DISEASES

The vast amount of harm that is done to ears during the exanthematous diseases, particularly measles and scarlet fever and meningitis, has seemed to be fully recognized. The ears of the children are well taken care of during the acute stages of the disease, and remedial measures are at once used. But what happens after the acute condition subsides? How many of these cases are properly followed up after the patient leaves the hospital? Yet if one glances over his histories of progressive deafness later on in life, he finds that frequently there is a history of the trouble having arisen during or after one of these three diseases. Meningitis with deafness often means that the nerve has become affected or that there has been some intracranial affec-

tion, and the condition frequently manifests itself at the time of the disease and so is given hopeless attention. But in scarlet fever and in measles, there is either a residual process left or there is a continuation of the catarrhal process which forms part of the disease. The acute inflammation has subsided or the suppuration has ceased and, at the time, the impairment of hearing is so slight that it passes unnoticed. But certain adhesive processes are left which mean permanent impairment of hearing—processes which, I believe, could often be remedied, if taken in time. There are some who feel that the hearing defect is caused by toxic processes during the disease; but there are others of us who are convinced that the deafness is due to neglect of the local trouble after the child leaves the hospital. Every parent who takes from the hospital a child who has suffered from one of these contagious diseases, should be advised to consult an ear specialist at once and, if there is the slightest impairment of hearing, every care should be taken to bring it to normal as soon as possible. I have sufficient data on hand to know what can be done in this way, and all of us have sufficient data in our histories of progressively deafened patients to realize that something more should be done for these cases than is done at present.

MORE CAREFUL TREATMENT AND TESTING OF CHILDREN'S EARS

I have indicated the kind of treatment that may be employed to prevent deafness. I have not taken into account the child who has been found to be suffering from slight impairment of hearing by either the teacher, the parent or himself. A child of school age is usually a sensible child whose hearing can be properly tested and whose ears can be properly treated. There are two factors which are of a great deal of importance in such a case. Invariably such a child has some form of nasopharyngeal obstruction which should be corrected, or else he has been blowing his nose improperly. In former papers I have spoken of pocket handkerchief deafness. This results in a relaxed ear drum which is an exceedingly difficult condition to treat. Children should be taught to blow their noses properly and not to use them like trumpets. Only one nostril at a time should be held and, if air is felt to force itself into the ear then, the nostrils should not be held at all.

Naturally, in preventive treatment, one must eliminate all causative factors either in the nose, throat or ear or in the general system. Next of importance is the proper massage of the drums at regular intervals. The eustachian tubes of children are far more widely open than they are in adults, and proper politzerization is a simple procedure when one has once gained the confidence of the child. It is amazing to see the vast, immediate improvement in the hearing of these children after careful politzerization. A medicated vapor should be used in the Politzer bag or the connection between it and the nasal attachment. I have frequently seen hearing, which was zero to the watch before treatment, return to normal after the treatment and remain so for a considerable length of time. The treatment will have to be frequently repeated, particularly after the child has had a severe cold. However, a word of warning should be given here. Too strenuous treatment of children's ears will result in more harm than good. Careful judgment must be exercised in every case. I hesitate to say that I have seen the hearing made worse by overtreatment, but such is the fact. Catheterization is a very difficult and often dangerous procedure in children, and it is wise to feel that a tube which cannot be dilated by inflation through the Politzer bag is a tube which is suffering from a pathologic obstruction which needs more attention than inflation. Aside from the above mentioned procedure, one may make use of a mild massage of the drum by means of a Siegel otoscope or an electric otoscope attached to an electric massage apparatus. The massage should never be given with sufficient severity to cause any engorgement of the drum.

EDUCATIONAL PROBLEM

The educational problem of the prevention of deafness has not been considerd with sufficient seriousness by the otologist. It has been left in the hands of educators who have been more interested in the congenitally deaf child. But medical men are realizing more and more that they must acquaint themselves with the various factors which lead to deafness in childhood, and with those factors which arise in childhood and bring about deafness later on in life. The problem divides itself into three parts: (1) education of parents, teachers and physicians to those factors which give rise to deafness; (2) the proper interpretation of causative factors in early childhood which can be corrected at that time, and (3) preventive measures which will arise during the routine examination of children's ears.

1. *Education of Parents, Teachers and Physicians as to the Factors Which Give Rise to Deafness.*—Certain cases of deafness are due to transmission of weaknesses from the parents, and may be considered congenital. Too much stress cannot be laid on the obtaining of the history of deafness and the possibility of the weakness of the ear mechanism being transmitted. Such cases are not essentially ones of hereditary deafness, and a great deal can be done to prevent the deafness occurring in the child, if proper care is given to the nose, throat and ears during the early years. When there is a history of deafness in the family, the parents should be carefully advised that any children, the result of their marriage, must receive more careful attention than children who spring from parents or forebears who have never had any trouble of that kind. The duty of disseminating this knowledge rests with the parents, the teachers and the physicians, particularly the latter, who are brought into more intimate contact with the family. The question of whether the educators should go so far as to advise deafened people not to marry is another matter and cannot be taken up in detail here. Deaf adults will marry, sometimes intermarry, regardless of any advice that is given them. But the problem becomes a more serious one if there is a history of syphilis in both father and mother or in either one of them. One has only to consult well worked out genealogical tables to appreciate this fact. Of course, neither parent may be aware that he or she has syphilis and, therefore, when deafness becomes evident in the child, a blood test should be made on the parents and the child. It may be possible, if the disease is discovered in time (but this problematical), that the diseased condition may be partially or completely overcome. It would be more than worth while to have a census of the deaf taken in each decade to be handed over to such an organization as the Volta Bureau, which could then be in a position to distribute the propaganda so necessary to instruct parents in the proper care of their deaf children.

2. *Proper Interpretation of Causative Factors in Early Childhood Which Can Be Corrected at That Time.*—This problem has been taken up in detail in the preceding paragraphs. The laity is sufficiently educated at present to understand medical problems explained to them in a simple way. People have come to appreciate the importance of the acute ear diseases and mastoiditis, and insist that a discharging ear receive proper treatment. But what they do not understand is that the ear which has stopped discharging, and which is still lacking in hearing acuity, is a great menace to the growing child and may mean untold unhappiness later on in life. Some of these problems can be dealt with very simply in childhood, but, if neglected, become one of our hardest problems after the child has got beyond the age of puberty. If we glance over the causative factors of deafness in adult life, we find that invariably there is a causative factor in childhood which perhaps was not apparent to the individual until it was brought to his attention at this late date. In our various leagues for the hard of hearing, throughout the country, we are trying to work out this problem now, and the possibilities for the prevention of deafness, from the knowledge thus gained, will be very great. In fact, our knowledge has increased so greatly during the last ten years that all of us feel that the next ten years will allow us to bring it more accurately before the public.

3. *Preventive Measures Which Will Arise During the Routine Examination of Children's Ears.*—Our greatest problem is the routine examination of children's ears. Parents are careful about the looks of the outside, but are very careless of the workings of the inside, of their children's ears. During early child life, a child's hearing should be variously tested, by any means at hand, particularly if he has had any acute condition of the nose and throat or of the ear itself. As soon as any trouble is discovered, the advice of a competent specialist should be sought. But parents will always be careless in this regard, and so the measuring of hearing acuity will rest on those who are educating the children. Routine examination of children's ears in school must, in time, become as important as the examination of their eyesight and teeth. We must not rest until it has become so. Nurses can be instructed to make the simpler examinations, and those children who need more detailed study can be separated from the rest and turned over to competent specialists. Dr. Josephine Baker of New York states that over 4,000 children who have defects in hearing are attending the public schools, and that little is being done for them at the present time. School clinics have to be established and the cases studied in such a way that the children are properly seated, according to the amount of hearing defect they have, or else are sent to schools for the deaf. One important problem arises here. Most of these children need medical treatment of one kind or another. It is unwise to send them to clinics which are far away from the school and to which they cannot come regularly. Clinics must be established in the schools themselves so that, under competent aurists, the treatment can be expedited. Little time will then be lost, and the problem can be more readily studied from the educational and medical standpoint.

CONCLUSION

Let me emphasize these points: There are more deaf adults in the United States than there should be; there are more deaf adults, because the moderate defect in hearing in childhood was not properly taken care of; and the problem of the prevention of deafness can be handled intelligently only by a precise cooperation between the parent, the educator and the physician.

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SOCIAL ALLEVIATIONS OF ADVENTITIOUS DEAFNESS*

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Deafness, no matter if the world finds it a petty affair, a joke or an annoyance, is truly a grief to him who has it. As in the case of any other physical handicap, deafened people must adjust themselves to deafness, and this reconstructive work must be comprehensive if the man or woman is to hold a place among independent citizens. Every person who acquires deafness in adolescent or adult life needs some degree of reconstruction. Many must either change their occupation [1] or become charges on their friends or their community; all must readjust their views of life and make the effort, no matter how difficult it may be, to keep mentally and spiritually normal.

The deafened themselves differ from other handicapped people in that they have organized and developed their own reconstructive work for their own kind, preaching the gospel of reconstruction, as it were, by example.[2] Public indifference and ignorance have been hard to change. In Newark, N. J., where a flourishing group exists, an article on the work of this organization was published by a local newspaper. Another column carried comment to this effect "Everything is organized nowadays. We note that hard of hearing people have a league of their own; we may expect to hear of a League of Persons with Boils on Their Necks."

Ignorance and indifference, however, are being overcome rather more rapidly than one might reasonably expect, and but one formidable enemy of this movement remains. Strange to say, this is an enemy in the very household of the deafened; it is the deafened wealthy man or woman whose sensitiveness takes the form of refusing to help lest his own handicap become known. There are very many of these. They fill great places in government, finance, industry, the professions, literature, society; yet, like all unreconstructed deafened people, they fear that the world will know of their deafness, even though it is minimized for them by their wealth and position. One of these is a man who is widely known as a soldier, novelist and playwriter. He made a modest contribution to a deafened organization, and insisted that it be anonymous, although he has ably and generously assisted other philanthropies by writing and speaking in their behalf. His deafness is so pronounced that it cannot be hidden. Such people are the greatest problem we deafened have; it is inconceivable that they should not be willing to help their own. The friend who will show

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1. Thirty-seven per cent. change their occupations.

2. The first deafened man to organize other deafened persons was Edward B. Nitchie, founder in 1910 of the New York League for the Hard of Hearing.

us how to open this particular oyster will deserve the canonization of our grateful hearts. Perhaps you who approach them so closely can tell us the way.

However, in spite of indifference, ignorance and sensitiveness, the deafened have attained the dignity of no less than sixteen organizations, which are doing various forms of social work in New York, San Francisco, Chicago, Jersey City, Newark, N. J., Toledo, Ohio, Pittsburgh, Los Angeles, Cleveland, Boston, Philadelphia, St. Louis, Washington, Dayton, Ohio, Toronto and Kansas City, Mo. They have organized, in cooperation with some of our leading otologists, the American Association for the Hard of Hearing to work in the national and international fields. This is at present holding its second annual meeting in Boston, and it has already nine constituent bodies (the Leagues for the Hard of Hearing in New York, San Francisco, Chicago, Jersey City, Newark, Toledo, Pittsburgh and Los Angeles, and the Lip-Readers' Club of Cleveland) besides a considerable number of individual members. It is about to change its name to one which shall better describe it—the American Federation of Organizations for the Hard of Hearing.

These sixteen organizations represent hundreds of rebuilt lives—deafened people who have overcome their handicap and are working for the good of other deafened people. They represent literally thousands of deafened people whose lives have been at least touched and ameliorated, who will never be quite as lonely, despairing or demoralized as if this movement had never started. In each locality they make their mark; they win the respect of all social welfare organizations; they educate employers of labor to the possibilities of the deafened worker; they show school boards that free instruction on lip-reading is the right of every deafened adult for economic reasons as well as humanitarian; they work for the discovery and treatment of partial deafness in schoolchildren and for special instruction in lip-reading for such children in their schools without segregating them with the deaf. As a typical case, let me cite the story of a boy of fourteen whose parents, on the advice of an organization, have placed him in a private school of lip-reading for the summer. He will enter high school next fall, taking a cooperative industrial course. His mother told the social worker that she had consulted a number of otologists, who all agreed that her son's deafness was incurable, but did not tell her what could be done to lessen the handicap. At last she went to an otologist who is deeply interested in this organization's work and is constantly in touch with its workers. He told her that her son must study lip-reading without any delay, and that his vocation must be carefully selected. Her gratitude overflowed her vocabulary; her problem was solved at last: "That—that—is a Hero-Man!" was her cry.

All these things may be called the outside work of the sixteen organizations; their inside work is naturally more concentrated. It is the complete rebuilding of lives. Their members study and practice the art of lip-reading; they procure employment; they learn how to make good use of hearing devices; they attack the non-social tendencies of the deafened toward isolation and ultimate demoralization by conducting every possible sort of activity which can restore a normal mental and spiritual attitude. These activities include parties of every description, cards, games, dances, outings; educative groups to supply in a special way what the deafened cannot get in a general way; among the latter are lectures, Bible classes, crafts, instruction, story telling, classes in social dancing, gymnastics and folk dancing, and dramatics; one organization has a small but earnest brass band. Nearly all have their own headquarters, a room, a suite or an entire floor in an office building; four maintain their own club houses; one operates a successful tea shop, and one conducts an up-to date vocational bureau and is otherwise so comprehensive that it truthfully calls itself a community center for the deafened.

It should be pointed out that there is no intention in all this to make life easy for the hard of hearing by segregating them from an unsympathetic outer world. On the contrary, the object is to develop alertness, independence and initiative, so that the reconstructed individual goes back into the one great world of work and play and commands its respect. And not only does he develop alertness, independence and initiative, but through good comradeship a spiritual healing takes place and the impulse to serve is born in him. He goes forth, therefore, ready and able to perform the full duties of a citizen—to pay his way, to keep fit and happy, and to help others. Many letters attest the truth and the force of this, for the people are so happy in their changed lives that they must not only say so, but offer service, and what is more, they pledge themselves to share the support of the organization which has helped them by making monthly or annual payments which are nothing short of remarkable, considering their means.

It may be asked what types are served by these organizations. Every type of human being plus the tragedy of acquired deafness. In every case there is the color of tragedy; it may be a tint; it may be deeply dyed. Many lives are saddened, as in the case of a prosperous business man who found in his local organization just the happiness he needed, and even the hearing device that remade the world for him; many lives are thwarted, but some are definitely warped by deafness. What relation, for example, does acquired deafness bear to crime? Let us consider two stories from the records of one of the larger organizations.

A was the 18 year old son of foreign born parents who did not recognize his deafness. Misunderstood and ridiculed, he ran away from school to New York. He was picked up in questionable surroundings by the police and brought to organization headquarters by a probation officer. Work was found for him and he was encouraged to study lip-reading.

B is an east side Italian committed to prison on conviction of assault. His case has been investigated and it is clear that he was an innocent victim for no other reason, apparently, except that he was a foreigner and deafened. He urged the necessity of getting him a job at once, saying that the police were watching him and that as he had been in prison even temporary unemployment was a peril. As this happened during the present industrial crisis, it was serious; but, fortunately, employment was found for him. He had been known to this organization before his conviction as a respectable working man supporting a paralyzed mother, but since his imprisonment he has shown signs of a growing mental depravity and it is now doubtful whether much can be done for him.

From these instances, it is plain that the deafened boy or man does not always get fair treatment in the

courts because it is often assumed that deafness is feigned. Organizations, when more widely known, will be able to forestall these injustices as well as to alleviate their after-effects and also the effects of punishment that has been well deserved.[3]

While it is true that the deafened are organized and are doing great works for one another, and in a larger sense, for the public good, they have one class of friends who work faithfully side by side with them; these friends advise them and they also share in government, financial sacrifice and all other responsibility. These friends are the great-hearted, progressive otologists of America. Without them, one might almost say, social work for the deafened would be impossible. It certainly could not hold its present high standard. Otologists have founded more than one organization; they are leading more than one as presidents; they are now organizing the deafened of several cities; they serve on many consulting boards; and an otologist, Dr. Wendell C. Phillips of New York, founded our American Association for the Hard of Hearing and is now its president. Among the most active may be named Dr. Harold Hays, for the last seven years president of the New York League for the Hard of Hearing; Dr. T. R. Chambers, organizer and president of the Jersey City League, and Dr. M. A. Goldstein, founder of the Saint Louis League; Dr. Shambaugh of Chicago, Dr. Thomas Hubbard of Toledo, Dr. Richardson of Washington and Dr. MacCuen Smith of Philadelphia work with the organizations in their respective cities; Dr. T. H. Halstead of Syracuse, N. Y., has established a lip-reading clinic; while the interest of the late Dr. Clarence Blake in the Speech-Reader's Guild of Boston, and the present cooperation of Dr. D. H. Walker with the Guild are well known.

In towns where these organization for the deafened exist, the otologists welcome them because they can send them their patients for lip-reading, advice as to hearing devices, employment, and for what they believe is of prime importance, recreation and companionship. The chief object of our American Association is to encourage the formation of new organizations. This need not be difficult. If the otologist will invite a group of deafened people to meet social workers, people of means, and the local teacher of lip-reading, where one is resident, a beginning is easily made. If there is no resident teacher of the adult hard of hearing, such a group can procure one, either through influencing the local school board or by applying to one of the schools giving normal training. Schools of lip-reading, such as the Nitchie School in New York, the Bruhn School in Boston and the Kinzie School in Philadelphia, are constantly sending out their normal graduates to establish new schools. These teachers are glad to settle where such inducements as the cooperation of otologists and a nucleus of pupils are held out to them. The association stands ready to help each new organization with information, advice and printed matter, and it can arrange to send speakers to address organization meetings.

We invite this section to make full and constant use of us; we invite its members to visit our exhibit at the home of the Speech-Reader's Guild; and we ask nothing better, as reconstructed deafened people, than to work shoulder to shoulder with the otologists for the social betterment of all who are adventitiously deafened toward the goal set before us by James Kerr Love of Glasgow: the prevention of deafness.

3. One children's court in Philadelphia has an attending otologist who says that, of the children brought in for delinquency, perhaps 10 per cent. are not delinquent, but hard of hearing.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. HAYS AND MISS PECK

DR. WENDELL C. PHILLIPS, New York: The Association of the Hard of Hearing is one of the finest organizations in this country. A series of panels is to be sent around the country for missionary work in the building up of organizations of this kind. I cannot tell you what a relief it has been to me to have at my hand a social center to which I can send my deaf patients, where they will be cared for and encouraged — rehabilitated, faith-restored, and self-directed. Experience with it has made me a missionary to the cause of having the work extended to all parts of the country. It is a sad travesty to be compelled to say to a patient, "Your hearing is gone and nothing can be done," when you know that a new life may be opened up for these people. I am in sympathy with every word Dr. Hays said. We ought to go into the public schools in all our cities and begin there the work for the prevention of deafness. Much can be done and little is being done in any of the schools. I hope you will think seriously of this, because we owe this duty to the deaf children and to the community. If you will write to the headquarters of the national organization we will send you literature to show how the work is accomplished. Then you can start a campaign of this kind in your own city in order to carry to the afflicted ones there this gospel of hope for the deaf.

DR. FRANCIS P. EMERSON, Boston: It is in the recent cases that our success lies almost wholly. In chronic cases we all have had difficulties. It is in the handling of these cases that I differ with Dr. Hays as to what takes place. In chronic cases I believe two processes are going on: First, the gross tissue changes with diminished tone perception which takes place with the onset of the deafness and which goes on throughout the course of the disease. If you analyze several hundred hearing tests you will find that they all conform to about the same formula. There is diminished tone perception for the whispered voice and raising of the lower limits in the recent cases. In those cases in which a pocket tube is used, as the tube opens, tone perception of the low limits becomes normal; but if that case is going on to complete deafness, tone perception of the upper limits, which is roughly indicated in its lower part by the whispered voice, continues to be lost. My final judgment is that it is the loss of this tone perception which is important, because until the patient becomes very deaf, the low limits are not again raised. Just before the low limits are raised, you may get evidence that there is some involvement of the cochlear nerve. This is indicated by tone gaps and by diminished perception for the 2,048 C^4 fork more often than for any other. This finding was confirmed by Dr. Dean in the use of his audiometer. With the raising of the limits and lowering of bone conduction we all recognize that there is nerve involvement; but by the time you can recognize nerve involvement by a metallic instrument, the process has gone on indefinitely. The second point on which I differ with the essayist is that I think the origin of this trouble is in a chronic focus with acute exacerbations and not in a reinfection. Taking a careful hisory of these patients, you find that the process which has started and is going on throughout life is manifested in other ways whereby you can account for general systemic conditions besides loss of tone perception.

DR. CULLEN F. WELTY, San Francisco: About fifteen years ago I dwelt especially on the indications for acute mastoid operation, saying at that time that if we allowed a case of acute suppuration to go along for more than a certain period, the hearing was more than likely to be impaired. Following mastoid operation in these acute cases, two thirds of the patients are improved in hearing. Why allow them to go

along and have further impairment of hearing? Another thing for us to determine is when to operate for adenoids and diseased tonsils. I say, at the first onset of any trouble. Do not wait for a second or third attack. In regard to otosclerosis, we cannot do anything for it; we do not know much about it; we know that it is hereditary. One of the foremost otologists of the world says that these people should not marry, that that is the only way to prevent the condition. At the Otological Congress at Budapest twelve years ago I maintained that in case a woman who is impaired in her hearing should become pregnant, she should have a therapeutic abortion. In regard to lip reading, I am associated with one of these organizations in San Francisco, and I can only subscribe to what Miss Peck has said regarding the wonderful field this work has opened up for persons who are really deaf or who have had their hearing destroyed entirely.

Dr. T. R. Chambers, Jersey City, N. J.: If Dr. Pynchon of Chicago were alive, he would recommend something which Dr. Hays in his paper failed to mention, and that is to teach people how to clean the little baby's nose. In the case of children up to 3 years of age who are brought for examination and treatment, you may have all the laboratory appliances you want, but rich and poor alike will neglect your treatment. My treatment is based on ideas obtained from Dr. Pynchon long before he died, and that is to tell the mother to place some warm boric acid solution in a large basin; and then put the baby's head down in the water. The baby cries; lift it up, head down, and the baby will clean its nose better than you can do it with any appliance. That has been my treatment for a long time and it has been successful. Elaborate treatments fail because they are neglected. Dr. Phillips brought this subject to my attention a year ago and placed me on a committee of the Hard of Hearing Association in New York. I was indifferent at first, but since becoming active in this work, I have been instrumental in getting up a fine organization in Jersey City. Many times I have been discouraged and about ready to give up, but persons coming one after another, exemplifying what we are doing in the reconstruction of these afflicted ones, inspire the hope that similar agencies may be instituted wherever there are deaf people.

Dr. D. J. McDonald, New York: Thirteen years ago I came before the society in regard to constructive work from the economic position of the deaf. It required six years' work to bring about in New York City the foundation of a school for the deaf through the help of Dr. William H. Maxwell. We must have cooperation within our own ranks. I am now in a movement to raise $150,000 in New York City to enable these people to help themselves. If this committee could have subcommittees in every city, we should be able to do effective work by distributing propaganda in the halls of Congress, in the various legislatures and in the different communities. So far we have been partly successful in New York, but, as Dr. Chambers says, it is hard to get the layman interested. However, any man who goes to the school on Twenty-Third Street and sees the work that is being done by Dr. G. B. McAuliffe and others will be glad to go to his legislators in an endeavor to have money appropriated for this work. When we consider that in the general educational system of the United States not 0.5 per cent. is given toward the education of the deaf, there is no reason why we should not get together here and have a committee appointed that will help these people to help themselves. Dr. George B. McAuliffe was appointed by the board of education to find out about the tone gaps, etc., referred to by Dr. Emerson. The teachers there could be very much improved, but this association, of which Dr. Phillips is the head in New York City, is on the right road to secure proper teachers. We hope that eventually we shall have three or four hundred men and women in this country who will be trying to help Miss Peck to carry on this most important work.

Dr. Harold Hays, New York: The majority of hard of hearing persons can be helped, either by prevention, by school work, or by medical attention, but they cannot be helped by local treatment at all. They must be treated systemically.

SOME PERSONAL EXPERIENCES WITH CASES OF MYASTHENIA GRAVIS*

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Although myasthenia gravis is designated either as a disease of the muscles or belonging to the endocrinopathies as a thymic disorder, yet its clinical position and nosology are very uncertain. On the one hand, particularly in the mild cases, the fatigue symptoms show a strong analogy to psychoneurotic fatigue, with the exception that in myasthenia gravis the fatigue is improved by rest and, on the other hand, more recent investigations seem to point that it may be an endocrine disorder or disturbance in the vegetative nervous system. Symptoms of myasthenia gravis are occasionally encountered in hyperthyroidism or exophthalmic goiter, and these symptoms have been known to improve after thyroidectomy or antithyroid therapy.

The disease is rather rare, although personal observations have shown that there may be mild forms of the disorder which are frequently confused with the psychoneuroses, particularly if fatigue be a prominent symptom. In 1878, Erb separated the disease from the progressive bulbar palsies of organic nature, and later Oppenheim,[1] in 1887, definitely described the disorder under the term of myasthenic paralysis or bulbar paralysis without anatomic findings. In 1891, Jolly first called attention to the characteristic electrical reactions occurring in the muscles, the so-called myasthenic reaction, although, as will be shown later, these electrical reactions are open to certain modifications and to new interpretations.

From the standpoint of medical history, although Oppenheim seems to have overlooked the fact in his monograph, it is interesting to note that a clear description of the disease was given by the English physician Thomas Willis,[2] in 1685, under the title of "Palsey." The rapid muscular fatigue and the bulbar disturbances of speech were described by Willis in a vivid and picturesque manner.

It is my purpose in this contribution to give some personal experiences with myasthenia gravis. It seems that it would be more valuable, instead of relating the medical histories in detail or in summary, to give a condensation of personal impressions, a sort of a clinical Galton photograph.

I have been particularly fortunate in having been able to observe and study eighteen cases of the disorder. Out of the eighteen cases ten were male and eight female. The age of onset among the male cases varied from 15 years, the youngest, to 62 years, the oldest, seven of these cases showing the first symptoms bfeore the age of 35. Among the female cases the ages varied from 16 to 49 years, practically the same as for the male cases with the exception of one case in which the first symptom manifested itself at the age of 62. This corresponds fairly closely with Oppenheim's observation that, "as a rule, young persons are affected, but there are exceptions."

The racial predilection is interesting. Ten of the cases were Russian-Jewish, four Irish-American, two

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Oppenheim, H.: Die Myasthenische Paralyse, 1901.
2. Willis, Thomas: The London Practise of Physick, 1685, pp. 431-432.

American, and one each in Dutch and Italian subjects. Why over 50 per cent. of the cases should have occurred in individuals of Russian Jewish origin it is impossible to state, until more is known of the exact etiology of the disease.

SYMPTOMS

The mode of onset, or rather the first symptoms of the disease were variable and may be thus summarized:

Severe general fatigue and thickness of speech, difficulty in chewing food and swallowing (bulbar symptoms), five cases.
Severe general fatigue with cardiac symptoms (central arrythmia and extrasystoles), one case.
Pure bulbar symptoms (difficulty in swallowing and chewing food, thickness of speech) without general fatigue, two cases.
Fatigue and diplopia, two cases.
Diplopia, ptosis, thickness of speech, difficulty in swallowing, three cases.
Excessive fatigue and drowsiness, one case.
Localized fatigue in the legs, two cases.
Severe general fatigue, one case.
Diplopia, one case.
Double ptosis, one case.

Because of these variable symptoms, the patients had first consulted specialists in their respective fields, for the eye symptoms, the opththalmologist; for the bulbar symptoms, the laryngologist; for the localized weakness in the legs, the surgeon; and it was only after further observation that the real nature of the disorder became clear.

An analysis of this material revealed certain features of interest. The general fatigue was usually rapid in its onset and improved by rest, thus distinguishing it from the false fatigue of the psychoneuroses, such as occurs in hysteria and the anxiety neuroses. In myasthenia gravis the fatigue becomes rapidly worse after exertion, particularly in localized muscle groups, such as in swallowing or in speech, whereas in the psychoneuroses, the fatigue is of an emotional nature and bears little or no relation to muscular exertion. The pupillary reflexes and the knee jerks were normal in all cases. In some instances the knee jerk became greatly diminished or actually disappeared after repeated tapping with the percussion hammer, but the reflex was rapidly restored after a few minutes' rest, thus corresponding to the rapid exhaustion and subsequent rapid restoration of muscular contractability on faradic stimulation. In a few cases also, an exhaustion of the pupillary reflexes could be demonstrated on frequent illumination of the retina.

Hyperthyroidism was not noticed in any of the pure cases of myasthenia gravis, although its possibility was taken into consideration, particularly because of the theory advanced by Chvostek that hyperfunction of the thyroid gland may produce the disorder. Muscular weakness and myasthenic symptoms are facts of common clinical experience in hyperthyroidism and exophthalmic goiter, the symptoms disappearing after thyroidectomy or after the administration of a thyroid antitoxin.

In none of these cases could any disturbances of the sensation be demonstrated, although Buzzard found sensory disturbances in his series of seven cases, in one of which there was a diminution of cutaneous sensibility of the root distribution type.

The onset in all cases was rather slow and occasionally without known cause. In some of the cases, however, it followed tonsillitis, influenza, severe gastrointestinal disturbances with diarrhea or an emotional shock. One case appeared after a lobar pneumonia, and one absolutely typical case followed shortly after a severe influenza. This patient died subsequently from respiratory paralysis. In this instance, whether the influenza was a direct cause or merely a precipitating factor in a myasthenia which was already latent, it is impossible to state. One patient had been an auctioneer for several years, and in this case the first symptom took the form of dysarthria, probably arising on the speech mechanism already fatigued through this strenuous occupation.

In those cases in which a Wassermann test was made, the reaction was always negative. No thymus enlargement could be demonstrated by the roentgen ray in any instance. In most cases the family history was negative, except an occasional tendency to tics or psychoneuroses. There were no mental symptoms in any of the patients except the usual reactive anxious depression. Two cases showed a doubtful Babinski reflex. In two cases also, hiccup was present for a time, a symptom which can be explained only on the basis of a myasthenic localization in the diaphragm.

As it is also the object of this contribution to direct attention to the milder and practically undescribed forms of the disorder, certain points of importance will be emphasized, since the fatigue symptoms alone bear a certain resemblance to the fatigue of the psychoneuroses. There are, however, several characteristics of the mild type which clearly differentiate the condition from the psychoneurotic exhaustion, particularly the developmental data of the clinical history, the nature of the fatigue itself and its relation to rest, and finally the electrical reactions. These mild types of the disease may be transitory or prolonged, but all the cases seem to progress to recovery and differ from the severer types in the absence of the characteristic facies, although slight ocular and bulbar symptoms may be in evidence after exertion.

The most prominent symptom of these mild types of myasthenia gravis is the phenomenon of exhaustion, both from the subjective standpoint and from the actual demonstration of abnormal fatigue through the electrical reactions and the reflexes. All the patients complained of a constant sense of severe fatigue, which became rapidly worse on exertion and rather slowly improved by rest, thus differentiating it from the emotional fatigue of hysteria or neurasthenia, which bears little or no relation to rest or exertion. Nor did the fatigue have the usual apprehensive anxiety of neurasthenic and hysterical states, but seemed to be actually localized in the muscles, particularly in the lower extremities. Experiments on the electrical reactions of the muscles of hysterics and neurasthenics complaining of severe fatigue showed a complete absence of the characteristic myasthenic reaction.

In the more severe cases, the bulbar symptoms of the difficulty in swallowing and the dysarthria after a few minutes' conversation also belongs to the same category of exhaustibility of the peripheral apparatus of speech and swallowing. In one case the drawling speech was the first symptom of the disorder, in another the rapid fatigue of the leg muscles in walking up stairs; in a third case, that of a barber, the initial fatigue was localized in the fingers resembling an occupational neurosis, causing him frequently to drop a razor or comb during the course of his work. In fact, it seems that strong myasthenic symptoms in the

so-called occupational neuroses may be the forerunners of a myasthenia gravis.

REACTIONS TO FARADISM AND GALVANISM

In all the cases, the typical myasthenic reaction to the faradic current was present, and the rapidity with which the complete exhaustion of the muscular contractions could be induced bore a direct relation to the subjective sense of fatigue. In other words, parallel with the improvement, the number of contractions of the faradic current or the length of time of application of a tetanizing current tended to diminish with improvement. It seems also that a tetanizing current produces a more rapid muscular exhaustion than the usual make-and-break test. The exhausted muscles rapidly recovered their irritability to faradism after a few minutes' rest. The fact also that the muscles showed a normal quick reaction to galvanism and without polar inversion, and that a muscle completely exhausted by faradism still reacted to the galvanic current of the same strength in milliamperes as before the faradic exhaustion, leads to the same interesting generalizations on the localization and theory of the disease. The characteristic reaction in myasthenia gravis is obtained by faradism, whereas in muscular atrophies produced by a lower motor neuron disease it is obtained by galvanism.

Even after the muscles have been completely exhausted by faradism, they still respond normally to galvanism, with a normal formula and quick, sharp contractions and always with the same amount of current as before the faradic exhaustion. No muscular atrophy or fibrillary twitchings could be demonstrated in any of the cases. Where bulbar symptoms were prominent or where a ptosis appeared, the facial group of muscles showed the best myasthenic reaction. If the fatigue was localized in the legs, the thigh muscles were selected for the test, whereas, if the fatigue is a general one without characteristic local symptoms, almost any group of muscles will show the typical myasthenic reaction.

As the case improves clinically, the number of contractions or the length of time necessary to produce muscular exhaustion by the faradic current gradually bcomes less, until it finally disappears altogether. Some very interesting curves could be plotted in some of our cases showing the parellelism between clinical improvement and the diminution of myasthenic exhaustion of the electrical current.

The course of the disease is rather slow, the mild cases seeming actually to recover. It is an open question, however, whether a genuine recovery ever takes place in the severe cases. In one patient, there was a remission of over ten years, when the myasthenic symptoms reappeared without any apparently known cause.

TREATMENT

Although treatment as a rule is rather unsatisfactory, yet personal experience has shown that the best treatment of the disease is symptomatic and consists of absolute rest, both general rest for the general fatigue and localized rest for certain groups of muscles, for the more definite local symptoms. If bulbar symptoms appear, producing dysarthria, the patient is forbidden to talk for a certain length of time; if there is dysphagia, the deglutition reflexes must be given as much rest as possible. In the latter instances only fluid or semisolid food should be allowed, in order to minimize the energy used up in chewing; and the swallowing muscles should be allowed an interval of from one to three minutes to elapse after each mouthful of food or swallowing of liquid. This plan is usually very satisfactory, as experiments on both voluntary contraction of the muscles and the reaction of the muscles to the faradic current demonstrate a rapid recovery from the myasthenic fatigue under these conditions. In fact, the data derived from the periodic examinations of the myasthenic reaction will often furnish valuable hints in the treatment and feeding of the patient.

Although recent investigations have tended to establish the fact that the disease may be of the nature of an endocrine disorder, yet it is doubtful whether ductless glandular extracts are of any value. As starchy foods are not well digested because of insufficient mastication and mixture with saliva, either the patient should be directed to keep food in his mouth as long as possible, or, what is better, one of the starch digesting ferments should be administered or mixed directly with the food. In all cases it is absolutely essential that the state of nutrition be carefully maintained.

The central nervous system in this disease shows no characteristic lesions and, basing our conclusions on the nature of the myasthenic electrical reactions, the disorder is probably some type of a toxic degenerative myositis. The characteristic electrical reaction of myasthenia gravis, either of the severe or of the milder types, is obtained by faradism and not by galvanism, whereas in the muscular atrophies following peripheral nerve degeneration or from lesions of the first motor neuron, the characteristic electrical change is obtained by galvanism. The myasthenic reaction strongly resembles the reaction obtained by both veratrin and protoveratrin, and the fatigue curve in myasthenia gravis is analogous to that of muscle preparations poisoned by these alkaloids.[3] In some of our cases in which it was possible to carry out the test, it was found that after complete exhaustion by faradism the muscles still reacted to the galvanic current. This seemed to point to the localization of the exhaustion to the motor end-organs rather than to the muscle fibers themselves. In this disease also the creatinin excretion is less than normal, and this points to the fact that myasthenia gravis may be a disorder of deranged muscular metabolism. A marked increase of the calcium output is also found; and since calcium plays an important part in normal muscular action, the good results obtained by the calcium salts in some of the mild forms of this disease may thus be in part explained.

CONCLUSION

It seems extremely doubtful whether the disease is a pure neurosis, in spite of the negative anatomic findings in the central nervous system, although certain neurotic and emotional features can be distinguished in nearly all cases which are carefully observed. Future investigations of the disease must be directed along several lines, such as the vegetative nervous system, which probably regulates muscular metabolism, toxic causes, for the reason that many cases seem to follow infectious disorders, endocrine disturbances and, finally, an examination of the unconscious psychic states.

3. Walker, A. D.: Brain, 1900. Meyer and Gottlieb: Pharmacology, p. 426.

ABSTRACT OF DISCUSSION

DR. W. F. SCHALLER, San Francisco: Were blood pressure observations made in this group of cases? This might throw some light on suprarenal deficiency as a possible etiologic factor. I have a patient under observation at present in whom blood pressure readings were repeatedly made and found normal.

DR. WALTER TIMME, New York: I should like to substantiate the fact regarding the racial factor. I have seen only three cases of undoubted myasthenia gravis in the last two years, and the patients were Jews over the age of 45. Their metabolic rates were all minus, varying from 10 to 17. Blood sugar was low in all, the lowest being 60 mm. to 100 c.c. blood. The blood pressure varied, but there were no departures from the normal in two. In the third case the blood pressure was over 200 systolic. All showed typical myasthenic reactions. This test should be done very carefully, 150 interruptions a minute of the faradic current in order to exhaust the affected muscle within two minutes. In all three cases there was a focus of infection; in the first case, carious teeth; in the second, a secondary sinus infection; in the third we could not determine the source of infection for a long time until an acute mastoiditis developed six months afterward and operation revealed evidence of an old chronic mastoid infection which had never been diagnosed. After operation the blood pressure rapidly fell, until now the systolic pressure is from 130 to 140. The myasthenia remains; the infectious process in the mastoid is still present, though slight. In the case with carious teeth there was little improvement after the extraction of the teeth, but in the third, the patient made a remarkable recovery.

DR. G. H. HOXIE, Kansas Ciy, Mo.: Were there evidences of leukemia? The literature contains cases under the diagnosis of leukemia which other writers have regarded as cases of myasthenia gravis.

DR. ISADOR H. CORIAT, Boston: The discussion has emphasized that we know nothing of the origin or nature of myasthenia gravis. It is true that some of my cases followed infection, but the more I study this curious disease, the less I feel I know about it.

JEJUNOSTOMY

A TREATMENT OF ACUTE ILEUS AND A PREVENTIVE OF POSTOPERATIVE ILEUS *

A. I. McKINNON, M.D.
LINCOLN, NEB.

The problem that confronts the surgeon in every case of obstruction of the bowels is emptying the intestinal canal. When free drainage is once established, the patient's urgent symptoms are relieved; and for the time being his case is changed from an almost hopeless surgical risk to a comparatively good one. The cause of the obstruction or the subsequent intoxication is not a matter of immediate concern. Emptying the intestinal canal for the present practically restores the patient to a normal condition. In short, drainage is the definite objective.

The advocacy of enterostomy for drainage is not new, being not infrequently employed following an operation for the relief of the obstruction. The surgeon opens the bowel not because he feels sure it will keep the patient alive, but from custom. He has no well-founded reason for the procedure. He has in mind no particular part of the bowel to open. He generally selects a point near the obstruction, where the bowel is most distended, and hence most paretic. This explains the fact that so few enterostomies drain successfully. In addition, to still further decrease the chance for successful drainage, the operation is generally performed under ether narcosis. It is common knowledge that ether inhibits peristalsis.

Some years ago, I read an abstract from an article by some foreign author on gastrostomy in postoperative peritonitis with ileus. He reported a few cases with recoveries. I inferred that the gastrostomy was performed to drain the stomach as it was filled from the intestines and to eliminate the depressing defects of vomiting. Jan. 21, 1916, I saw a case of obstruction of the bowels of seventy-two hours' duration. I felt that an operation under a general anesthetic to relieve the obstruction and drain the intestine would be fatal. I, therefore, decided to perform a gastrostomy under local anesthesia as a temporary expedient, and if it were successful, a curative operation could be performed later. On opening the abdomen, I found neither stomach, transverse colon nor omentum visible or easily palpable, for the reason that these organs had been displaced upward by the extreme distention of the intestine. I was in a quandary. I decided that, inasmuch as I could not drain the stomach, I would drain the intestine near the stomach. I picked up a loop of the jejunum near its origin, put in a purse-string suture, punctured the intestine, introduced a small drainage tube, anchored the tube with a retaining suture, then another purse-string suture and dropped the intestine into the abdominal cavity.

The tube began to drain liquid intestinal contents and gas immediately. Large quantities poured out intermittently. The patient was soon able to take a deep breath, and after a few deep inspirations, expressed herself as feeling all right. In a few minutes, the clinical picture had changed as if by magic. Her convalescence was uninterrupted, the bowels moved naturally within thirty-six hours after the operation. The tube dropped out on the fifth day and there was absolutely no leakage afterward. The patient left the hospital on the seventh day. (The obstruction, evidently, was due to a volvulus.)

To the best of my knowledge, this is the first case on record in which a tube was introduced into the upper end of the jejunum to relieve obstruction of the bowels.

Shortly after this, I saw another case of acute obstruction of the bowels with extreme distention. I performed the same operation; that is, I put a tube into the jejunum under local anesthesia. The result was as dramatic as in the first case. After a few inspirations the patient remarked that she was feeling all right. She improved steadily and took nourishment freely; however, nothing passed through the rectum. After five or six days, she was again taken to the operating room and given a general anesthetic. The abdomen was opened and a Meckel's diverticulum was found with a fibrous band attached to the mesentery. Through this loop, several coils of the intestine had become incarcerated, causing complete obstruction. The diverticulum was removed, and the patient made a complete and prompt recovery. I have used this method of relieving intestinal obstruction in a large series of cases with marked success, and the mortality has been reduced almost to zero.

I have become firmly convinced that the poor results of the operation for ileus are due to the use of general

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anesthesia and faulty drainage. Undoubtedly, too much emphasis has been laid on the pathology of obstruction and not enough on the physiology of peristalsis and the mechanics of drainage.

From my experience and from clinical observation, it is my belief that the chief factors causing death in intestinal obstruction are of a mechanical nature and incident on the abdominal distention. This distention leads to a displacement of the abdominal viscera, crowding the diaphragm and subdiaphragmatic viscera virtually into the thorax, thus diminishing the capacity of the lungs to such an extent that asphyxiation ensues, with its accompanying symptoms of rapid shallow respiration, rapid pulse, leaky skin, cyanosis, etc.

A properly performed jejunostomy will drain the intestinal canal, reduce intra-abdominal tension, improve respiration—all this, with a surprising suddenness.

This dramatic change from a condition of imminent dissolution to one of comparative well-being in a few minutes would not occur if the symptoms were due to toxic absorption.

TECHNIC

The use of a local anesthetic is imperative for obvious reasons. (It does not inhibit peristalsis nor add to the patient's toxic condition.) A short incision is made through the upper left rectus muscle, beginning at the margin of the ribs. Next, the upper end of the jejunum is located. This is the vital, likewise the most difficult, part of the operation. The ungloved index finger is introduced and the bifurcation of the abdominal aorta is located. Normally, the jejunum is within an inch above it, to the left. It may be pushed up several inches. The right side is palpated for the root of the mesentery at the upper border, and by sweeping the finger from the aorta to the left, the beginning of the jejunum will be found. A pair of intestinal forceps is introduced and a loop of the bowel is delivered.

Next a purse-string suture is inserted, the bowel is opened, a drainage tube is inserted 2 or 3 inches, with the point away from the stomach. A retaining suture is put in and the purse-string suture is tied. Another purse-string suture is inserted three fourths of an inch from the tube, invaginated and tied, then the bowel is returned to the abdominal cavity. The bowel should not be sutured to the abdominal wall.

COMMENT

There are other conditions besides acute obstruction in which jejunostomy has proved to be a life-saving operation; for instance, in perforated ulcer of the stomach, in general, suppurative peritonitis, in perforations and resections of the bowel.

To a jejunostomy performed at the completion of the operation to forestall a possible ileus, I have given the name complemental jejunostomy.

It has been my observation in complemental jejunostomy that for the first twenty-four hours the drainage is slight, consisting of a few ounces of bile-stained mucus. After this period, drainage is profuse. When normal peristalsis is restored tube drainage ceases. One of the most striking results is the absence of postoperative pain and discomfort, as repeatedly expressed by patients who have formerly undergone abdominal operations. Invariably they will tell you that during their convalescence from former operations they suffered from gas pains. The question has often been asked, Does leakage of the bowel follow the removal of the tube? The answer is, that there is a cone of intestine projecting into its lumen. When the tube drops out, this acts on the principle of a safety ink bottle, thus preventing drainage.

In acute obstruction of the bowel, a high jejunostomy will drain the intestine immediately and continuously, as long as peristalsis is active and reversed. The abdomen should be opened under local anesthesia. Even in cases that are seemingly hopeless, and in which drainage is not free after jejunostomy, I found that washing out the stomach and the introduction of coffee, whisky, etc., through the tube sometimes stimulates peristalsis, and drainage soon becomes profuse and continuous.

A jejunostomy performed following a serious abdominal operation (a complemental jejunostomy) practically does away with postoperative vomiting. It eliminates gas pains and it always prevents postoperative ileus. It is valuable in desperate cases.

ABSTRACT OF DISCUSSION

DR. ANGUS MCLEAN, Detroit: I have had a good deal of experience with ileus. In many of these cases at the time of operation one is in doubt whether or not stasis will occur. When you are skeptical about that, inject a few ounces of castor oil into the intestine, use a hollow needle and put a purse-string suture around. I have had several cases of so-called postoperative ileus or obstruction coming on two or three days later. The condition is usually preceded by distention and vomiting. The stomach should be washed out early. If the patient does not respond, you must make an opening into the intestine. Under no consideration use a general anesthetic of any kind, not even nitrous oxid gas. You can do this very well under local anesthesia and sometimes you can do it without using an anesthetic of any kind. Simply open the abdomen by taking out a few stitches. You may go too high so that secretions leave too soon. It is hard to nourish these people by mouth if the opening is too high up. You can puncture a dilated portion in the vicinity of the wound that may not reach it, but that will empty out the portion; in three or four hours that upper portion will crowd down and you can do that again. I have seen as many as four openings, and eventually the contents of the upper canal come through and the patient will be relieved. I know of nothing in surgery so beneficial as puncture of the intestine at the proper place when there is distention and a postoperative ileus, an obstruction. This obstruction is due to twisting or paralysis. I have seen dozens of them, after puncture where in two or three days the canal is restored, the bowels will move and secretions will go in the correct channel. You have a distended loop; puncture; it collapses, and I have seen some of these fistulas heal themselves; nothing further is necessary to be done.

DR. ARTEMAS I. MACKINNON, Lincoln, Neb.: The reason for emphasizing the necessity of a high opening in the jejunum is illustrated by the case of a young man taken sick at midnight following a hearty meal before going to bed. I saw him almost seventy-two hours after onset of the obstruction. His condition was bad. I did the usual operation under a local anesthetic and brought out a loop of bowel, which I took to be the upper end of the jejunum, put in a tube and dropped the intestine back into the abdomen. It drained only a few ounces. I decided that I had not drained the upper end. I introduced my finger, and on palpating between spine and kidney, I found the beginning of the jejunum, and delivered a loop and put in a tube. The drainage was profuse and continuous. In a short time he was able to take a deep breath, and after a few inspirations he felt all right. That case was very valuable. If I had stopped with my first puncture the chances are it would not have done him any good. I have not had any trouble with

leakage following the removal of the tube. Drainage lasts only as long as peristalsis is reversed; when normal peristalsis is established, there is practically no drainage through the tube. In complemental jejunostomy, for the first twenty-four hours, there is practically no drainage following an abdominal operation under ether. This explains in part why our operations for obstructions were not successful when we did them under a general anesthetic. During the second and third twenty-four hour periods, drainage is profuse; after this it is less; and with normal peristalsis there is practically no drainage through the tube.

WHOLE BLOOD TRANSFUSION AND CITRATED BLOOD TRANSFUSION

POSSIBLE DIFFERENTIATION OF CASES *

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The time has arrived, it seems to me, to compare the methods of blood transfusion of recent development, with a view to determining whether, as has so often happened in other fields of endeavor, the pendulum has not swung too far in favor of the latest discovery. The necessity for this comparison is, perhaps, not so apparent to those who are familiar with the transfusion of blood only by the citrate method, as it is to those of us who have seen the procedure develop from the terribly difficult direct artery-to-vein major operation affair through the various simpler, indirect methods of giving whole blood, until finally the noncoagulative blood came into vogue, nor are the former in position to make the comparison.

SIMPLICITY OF CITRATE TRANSFUSION

It should be well understood that whole blood transfusions were only discarded because of the tremendously simplified technic of the citrate transfusion. There was never the slightest criticism concerning the efficacy of whole blood. It answered every purpose and was most satisfactory, once it was transfused. The only trouble was transfusing it—and that was such a technically trying and elaborate affair that the transfusion field was limited to a comparatively small group of specially trained operators.

It was because of this difficulty that the citrate method, whereby blood could be rendered uncoagulable by the addition of comparatively small amounts of sodium citrate and in this state kept for hours and injected into patients at will, was received with acclaim throughout the medical world. Nor would I decry this acclaim. I, myself, long a devotee of the whole blood method, took part in the deserved enthusiasm that followed the Agote-Lewisohn discovery, for I had long before become convinced that if the procedure of transfusing blood was to become popular and be of general service some such method needed to be evolved. I promptly adopted it, in company with most all other students of this subject. I carried out quite a series of citrate transfusions and became so convinced of the efficacy and simplicity of the method, and the possiblity of its wide usefulness that in June, 1917, I read a paper before this Association advocating its general adoption. During the war I watched with interest the generalized use of this method of blood transfusion, being firmly convinced of the correctness of that attitude of the Army authorities whereby all other methods for the time being were excluded from use. Nor have I cause for changing fundamentally that early opinion. The greatest good for the greatest number will come from the use of sodium citrate transfusion; it is undoubtedly the method of election for most men and for most cases.

UNFORTUNATE SEQUELAE

But we must not be blind to the fact that the sodium citrate blood transfusion possesses certain obscure, but none the less inherent, features that are not only embarrassing to the physician but most uncomfortable and even dangerous to the patient. Apparently there are a certain few patients, a small proportion of the total perhaps, but none the less definitely a certain few, that should not be subjected to this form of transfusion; for in the light of our more mature experience it is utterly ridiculous to pretend any longer that the reactions that follow the giving of citrated blood are harmless and susceptible of being ignored. Chills and fever and profound shock have never helped any one, and to ignore the danger of these sequelae, merely to note their occurrence without vouchsafing a careful consideration of their eventualities, is little more than admitting a mind closed to certain embarrassing features connected with the procedure.

Still this is the attitude we have maintained, our enthusiasm for the method having rather obscured our better judgment. It is true that we did take notice of these sequelae from the start; but it was felt that increasing familiarity with the method would eliminate its evils. Alas, vain hopes! The dread reactions still persist and persist despite the most painstaking efforts to discover their cause or origin, despite the most careful mixing of citrate with blood, despite the most carefully planned and executed citrate transfusions carried out by men whose long experience with general blood transfusion would preclude the possibility of technical error. Some thought that if the sodium citrate were freshly made, there would be no reaction following the transfusion, but that turned out to be a false hope. The use of freshly distilled water in making up the citrate solution was then advocated as a preventive, but that failed to make any material difference. Then warming the blood was tried, together with a host of other minor measures, but so far as I am aware the difficulty has not been overcome.

Worst of all, we are not even in position to tell just when a reaction will occur and when one will not. I sometimes think that if it were possible to predict, to be able to say that in a given case the conditions are such that no reaction need be feared, our minds might be a great deal easier in the use of this method. We are not in this position and the chances are that we never will be, since we are more and more inclining to believe that the reaction is due solely to the action of the sodium citrate itself. The phenomenon of the occurrence of the reaction in one case and not in another, probably will be found to resolve itself into a question of drug toxicity, an idiosyncrasy such as is shown toward many other drugs.

I have tried the various preventive measures advocated without avail. Knowing that the citrate is eliminated through the kidneys, on several occasions I have tried allowing the citrated blood to pass into the veins of the recipient in the slowest possible manner, once consuming an hour for 500 c.c. of blood, hoping

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that elimination would occur during the course of the blood inflow. But my patients suffered the reaction just the same, so I gave that up.

More men are doing transfusions now than ever before, and since many of them have had little experience and consequently can boast of only a minimum of skill in the work, the percentage of reactions is actually increasing. At first, we were rather inclined to the belief that the phenomenon was harmless. It was unfortunate and distressing both to the patient and the doctor, but little attention was paid to it—it appeared to be but a passing phase. All patients seemed to recover from it and the reaction over, citrated blood seemed to possess the same beneficent action and power as whole blood. So we assuaged our doubts at first. Then there occurred a case that did not get over the reaction, and it was not so very long before a similar one transpired and since then there have been others. Yet until this moment no warning has been sounded, though the number of deaths has been considerable. Our apathetic attitude on this question of citrate transfusion reaction is not unlike our attitude toward the blood-matching tests in the early days of blood transfusion development. Then every one felt that it was nice to match up the blood of donors and recipients prior to transfusion, but by no means essential or necessary—merely a refinement, nothing more. I was in this delightful state of mind myself. I had done a number of transfusions, ten or fifteen, quite successfully and with excellent results and without a thought of matching bloods, when lo! tragedy ensued. I had a death and the most distressingly sad death. It is true that the case was an emergency, a grave one, and there would have been no time for tests even had I wished to make them. But I would not have had them made if there had been hours and days of time, for with my successes I was convinced that they were but a superfluous refinement! What a terrible awakening! The most frightful case of hemoglobinuria resulted, from incompatible bloods, of course, and, in spite of every effort to stave off the inevitable, the inevitable occurred!

Even so, the true significance of this disaster dawned on me slowly, and it was not until some time later that I became convinced of the absolute necessity for blood tests preliminary to all blood transfusions. Private investigation brought forth the confession on the part of others of accidents similar to mine—and for the same blind reason. Just how many deaths did occur before every one became convinced of the prime necessity of blood tests no one will ever know, but there must have been a number. That there were not a great, great many is due solely to the fact that blood transfusions were rather rare occurrences in those days, owing to the inherent difficulties in performing the then fashionable direct transfusion.

So I maintain that this reaction following the citrate transfusion, with its inherent danger and the failure of medical men to take cognizance of its importance, is analogous to the story of our erstwhile indifference to blood tests, and I am trying to sound a warning. Deaths following reactions from citrate transfusion cannot longer be considered as accidental and unrelated to the reaction, nor can they be regarded as due to blood incompatibilities when competent laboratory workers have ruled out this factor by tests, not only before transfusion, but by control tests afterward. Furthermore, it is unscientific and stubborn to take the stand that reactions are merely troublesome, perfectly innocuous and therefore of no consequence. I have had two deaths from this method of transfusion, and I have personal knowledge of about four additional unreported deaths, not to mention numerous other miraculous escapes from death, and I feel quite sure that the experience of many others has been not unlike my own. Indeed, one encounters hints to this effect in various articles that occur in the literature.

Since it is impossible to say what the exact cause of the reaction is, and impossible to eliminate it as a factor in citrate transfusion, the next best safeguard is to attempt to differentiate those cases that can safely be trusted to withstand the citrate reaction, should one occur, from those which under no circumstances should be exposed to this risk. We know now that in from 20 to 40 per cent. of the citrate transfusions a reaction of varying intensity will occur, while in the ordinary whole blood transfusion reactions may be expected in hardly more than 5 per cent. of the cases. If, then, we can determine with some degree of certainty which are the cases that cannot stand transfusion by the citrate method, we will have made a step in advance.

TYPES OF CASE UNSUITED FOR CITRATED BLOOD

According to my experience, there are apparently two types of case which should not be given the citrated blood:

1. That in which there has been a hemorrhage of such intensity that the extreme limits of bleeding have been reached, and the patient is in such a state of shock that everything in the nature of additional shock must at all hazards be avoided.

2. Those states of anemia, either primary or secondary, in which the blood depletion has progressed to such limits that the patient is almost dead.

Not many months ago, early one morning, I was aroused from a deep sleep and asked if anything could be done to save a man who had been given 500 c.c. of citrated blood four hours previously, and who was apparently dying from the reaction that had occurred. The case was one of the most profound exsanguination from bleeding of a duodenal ulcer. The man was conscious at the time of transfusion, but in the most critical state imaginable. He had had a frightful chill following the giving of the blood in spite of the fact that most careful preliminary tests by competent special laboratory workers had been made. The temperature rose to 105 F., the pulse became imperceptible, and he died from shock. That is an example of the first type of case which I have cited as unfit for transfusion with citrated blood. Those who are familiar with extreme exsanguination, and the profound degree of relaxation of all bodily functions that accompanies it, which we call shock, will at once recognize the common sense in my statement that every means possible should be taken to avoid any additional shock. And since it is well known that whole blood gives rise to a reaction in but the smallest possible percentage of cases, it can readily be recognized that this is the method of election in such instances.

Two striking cases almost parallel with each other brought me to the foregoing conviction, and these cases are illustrative of the second type of case in which citrated blood ought not be given. The first was an elderly woman who was having air-hunger, as a result of prolonged and exsanguinating bleeding from a

uterine fibroid. We took time to make the usual tests and then, in my ignorance, I gave her a citrate transfusion. She had a profound chill and died three hours later. The second was a younger woman who was so weak from prolonged and exsanguinating uterine bleeding of unknown origin that she was unable to talk above a whisper. The first case was vivid in my memory, and by that time I had begun to formulate my ideas of differentiation—so, fearing disaster from a possible reaction, I gave that girl a whole blood transfusion. She had no reaction whatever, and immediately took on renewed life. Two days later, feeling that she could stand the shock of a reaction and wishing to test out my incipient theory, I gave her the same amount of blood by the citrate method. She had a reaction, a most violent one; but as I had surmised she was able to withstand it, and came through. Her recovery was slow but uneventful.

In certain of the primary anemias, especially when the blood picture is profoundly low, it is best at least to begin with whole blood. Several years ago, I was asked to perform a transfusion on a woman suffering from pernicious anemia whose condition was extremely critical. I had given citrated blood to others suffering from the same disease, and equally ill and anemic, with fortunate results, so I gave this patient the same type of transfusion. But she died. She had a reaction, and not such a terrible one at that; but she was evidently on the border line and was simply pushed over. This was the case which first aroused my doubts as to the suitability of citrated blood for all types of patients. I looked up the records of my other cases and found, curiously enough, that those most profoundly ill had failed to have a reaction at the first transfusion, which probably explained the lack of fatalities in this group. I remember even thinking that perhaps those most depleted of blood might possibly be secure against the reaction. Such was my ignorance. But though this death rather impressed me, I still remained unconvinced, probably, I realize now, because I was unwilling to admit the possibility of a citrate reaction death. The other physicians in the case rather believed that the patient was dying anyhow, and past saving, thus bolstering up my unwillingness. Thus do we permit our consceince to be salved and our judgment warped!

While I was in France, there occurred in Baltimore two deaths following citrate transfusions in circumstances almost exactly similar to those just mentioned. As a result two widely known and well recognized physicians had come to the conclusion, independently of each other, that citrate transfusions were dangerous and that if possible they would have no more of them performed on their patients! On my return, however, being unaware of this stand, I performed a citrate transfusion on a patient of one of these men, Dr. Julius Friedenwald, and when the patient suffered a most violent reaction from which he nearly succumbed, I received a gentle, but none the less firm, admonition. Three subsequent transfusions of whole blood on the same patient were totally devoid of untoward after-effects, and he made a good recovery. The tests in each instance were made by the same laboratory man.

I do not mean to say that every patient of this type that has a reaction will die! On the contrary, I believe the majority of them will recover. But there is a chance that the occasional one will succumb, and since the occurrence of the reaction cannot be foretold, it is this occasional patient that we should endeavor to save by giving the whole blood. There are refinements of differentiation in medicine and surgery, and it is high time we were introducing them into this field of work. The master of surgery at the Mayo Clinic possesses a higher degree of skill, he has a more refined technic than his brother surgeon of less experience and opportunity, and his results show it. The art of surgery finds its highest development in a Halsted or a Finney. He uses the finest ligatures in tying vessels, he handles tissues with the utmost delicacy, he takes, for example, the most extreme pains in handling an appendix stump. Another surgeon is perhaps a more rapid operator, he is less considerate of tissues, he ties vessels more or less *en masse,* feeling that it is unnecessary to take the time required to separate out each vessel and ligate it individually. His results are good and he is quite satisfied. But he achieves a poor result a bit oftener than the master, and he loses that occasional case which perhaps is saved by the master's refinements of technic.

CONCLUSIONS

It will not do to pass this matter over lightly; we are entrusted with human lives, and it is little enough to ask that we assume the burden with serious thought. We may expect that in from 20 to 40 per cent. of all citrate transfusions, a reaction of greater or less severity will occur. In this state of uncertainty, let us attempt to sift those cases which would seem to run a fatal risk if a reaction occurred and give them the benefit of the more refined whole blood transfusion in which the percentage of reactions is hardly so much as 5 per cent. I have mentioned two great groups of cases in which citrated blood is unsuited, but as time goes on and more attention is paid to this matter, still further differentiation will probably be made. I would not have you think for one moment that this is an attempt to belittle the value of the citrate transfusion. No one realizes better than I how much that has meant to the medical profession and to humanity at large. But it is necessary to recognize the fact that there are definite limitations to this method of giving blood and that failure to observe these limitations has caused unnecessary loss of life.

It is most unfortunate that the giving of whole blood necessitates a far higher degree of skill than does the giving of citrated blood. It requires great and constant practice, a real knowledge of surgical technic. Therefore, it seems that this method of transfusion must always remain in the hands of surgeons. There should be in every community, at least one man who is competent to carry out the whole blood method, and physicians should learn to differentiate their cases so that they may take advantage of this man's skill, and give to their charges that chance for life for which they come to him.

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ABSTRACT OF DISCUSSION

DR. HARRY G. SLOAN, Cleveland: People needing transfusion are usually classed in the handicapped group. We feel that if we add any factor to the transfusion which is damaging to the patient we have discounted the benefit that we wish to confer on the patient receiving blood. Blood hemolysis is one of the principal dangers in transfusion. This can be avoided by the proper grouping and selection of cases. The selection of the technic in transferring the blood is a very important point. Next to direct blood vessel suture, which transfers the blood into the patient's veins in the least

changed condition, but which is a painstaking operation, the method of choice is the transfer of whole blood by means of a paraffined glass tube. We have recently been using this technic more and more in transfusions. Dr. Raffl, of the house staff of Lakeside Hospital, has recently gone over the cases for two years, which number 436, and has found reactions in 5 per cent. We classify as a reaction following transfusion any rise in temperature above 1 degree C. As for the case with which blood is transfused by means of paraffined glass tubes, we no longer think of this as a real surgical procedure. In fact, the house staff does all the transfusions. There is no technical difficulty in carrying the blood from one room to another. Practically all the transfusions are done in the ward or in the patient's room. If further surgical intervention is necessary, patients are removed to the operating room. More and more we are using transfusions in the treatment of patients whose diminished blood volume handicaps their oxidation processes, not only in cases of acute shock, but also in cases of pyogenic or tuberculous infection. In this way, they receive a temporary boost until such time as they can overcome the effect of their infection by their own resources.

Dr. Beth Vincent, Boston: Various causes of reactions have been considered, such as the introduction of a foreign protein, early coagulative changes in the blood during transfusion, and hemolysis of the red corpuscle varying from that of such slight degree as to be undetected by ordinary clinical methods to gross hemolysis giving rise to hemoglobinuria. Sodium citrate is said to promote reactions because it increases the fragility of the red cell. The individual susceptibility of the patient is an important factor. This varies with the individual and the disease. Some patients are very resistant; in others the degree of susceptibility is just as striking. This susceptibility is especially marked in diseases which show active hemolytic changes, such as advanced malignancy, septic conditions with hemolytic manifestations, and the blood diseases of which pernicious anemia is the best example. Clinically, reactions appear in three forms. Possibly they are different degrees of the same reaction. The first is a mild form manifested by chills and fever, usually brief and comparatively harmless. The second form is more severe and may lead to a fatal result. This is the hemolytic reaction which sometimes comes after the introduction of incompatible blood. There is restlessness, flushing of the face, dyspnea and precordial pressure; nausea and vomiting or slight convulsions. The patient often complains of intense pain in the back. These are the early signs of a reaction, and they are a signal to stop the transfusion no matter how urgent the case. Thirty or 50 cubic centimeters of this blood may cause a profound reaction, and 500 c.c. has caused a fatal result. After the transfusion there may be chills, fever, jaundice, hemoglobinuria, vomiting, diarrhea and even dilirium and coma. A fatal result may ensue, but the patient usually recovers within twenty-four hours unless too much blood has been given. The third form of reaction is very rare, fortunately, because at present we are unable to guard against it. This reaction sometimes occurs in cases of pernicious anemia in which repeated transfusions have been performed, and it may occur after the introduction of compatible blood or, at least, blood which has been proved compatible by all the tests now available. As yet, no adequate explanation has been given for this type of reaction; but it would seem that repeated transfusions may sensitize a patient with pernicious anemia so that a reaction will follow the introduction of any kind of blood.

Dr. Richard Lewisohn, New York: I agree with Dr. Bernheim that it is impossible to predict when the chills will occur following transfusion, and that these chills are a serious complication following transfusion. No method of blood transfusion is free from chills. The syringe method has 5 per cent. and the citrate method has about 20 per cent. of cases with chills. Ravdin and Glenn recently reported 138 citrates and forty-seven Kimpton transfusions. The percentage of chills was the same with both methods. They report one death following the Kimpton and one death following the citrate transfusion. I have repeatedly seen that in the same person citrate transfusion did not cause any chills, whereas subsequent transfusion of noncitrated blood caused chills, and vice versa. The present popularity of tarnsfusion depends entirely on the citrate method. All other methods require especially trained staffs. It therefore must be our object, not to abolish this method or restrict its use, but to prevent the chills. The sodium citrate is not the cause of these chills. Neuhof has given from 6 to 8 gm. sodium citrate intravenously to stop hemorrhage in more than 100 cases without any chills. In the citrate transfusion we never use more than 2.5 gm. for one single transfusion. It has been stated that small clots might form with the citrate method and that they may be the cause of these reactions; but clots form with any method. I have started a series of experiments to determine whether chilling of the blood during its transfer from donor to recipient may have something to do with the occurrence of the chills. In my observation of about 500 transfusions of citrated blood, I have never seen any serious accident, when proper indications for transfusion were followed. The simplicity of the technic is likely to bring about a laxity of indications. Without careful indications, transfusion of blood will not retain the popularity which it has acquired during the last six years.

Dr. Arthur C. Kimpton, Boston: In 1912 and 1913, Mr. Brown and I originated the so-called Kimpton-Brown tube. I have never seen any reason for modifying it or changing my technic, except in not cutting down on the donors. I have performed more than 500 transfusions by that means. I have had two deaths. The patients had been tested out by every known means. That does not mean that tests are of no avail. Why transfuse patients by a method the reader himself condemns? These patients are transfused because they are usually moribund. Why add a method that may possibly harm them further? What does citrate do to the blood? It destroys the platelets. That is one reason you want to transfuse, to give more platelets. If citrate destroys any part of the blood, why use it? Why use it when there is something better? If Dr. Lewisohn or Dr. Bernheim were to be transfused I believe they would select whole blood. The Kimpton-Brown method is difficult as a war method. I believe many men transfused with citrate on the other side would be alive today if they had been given whole blood. Many are alive because they were given citrate. I rarely see a reaction. I rarely cut down on a donor's vein. I have had difficulties in doing some transfusions, but I do not believe that will occur with the paraffin tube more often than with citrate.

Dr. J. Shelton Horsley, Richmond, Va.: I lost a patient from the citrate method of transfusion, when the blood had been properly matched. I believe that in transfusion, as in other operative procedures, if we will stay as close as possible to the physiologic normal, the results will be better. Sodium citrate is a foreign substance in the blood. The Kimpton-Brown method utilizes the whole blood without citrate; but when whole blood is not contained within vascular endothelium, it undergoes certain changes, even before clotting occurs. The direct method of introducing blood from the artery of the donor into the vein of the patient is ideal. For the last year I have gone back to direct transfusion and have done this about twenty-five times in succession without the slightest reaction. I use the tube devised by Dr. Bernheim. One half of the tube is placed in the radial artery of the donor and the other half in the vein of the patient. The donor walks to the patient's room and reclines in a Morris chair while the transfusion goes on.

Dr. Bertram M. Bernheim, Baltimore: Conditions are such that not every one is able to have Dr. Kimpton or Dr. Lewisohn do his transfusion. If I were in Boston and wanted a transfusion, I would have Dr. Kimpton do it; if I were in New York and wanted a transfusion, I would have Dr. Lewisohn do it, but the fellow out in the country, away from the larger communities where men skilled in the whole blood transfusion are to be found, would be out of luck if it were not for this citrate method. I have tried to take an unbiased attitude. It was at my suggestion that the Surgical Department of the American Expeditionary Forces gave over the entire subject of blood transfusion to the Medical Department, and it was furthermore at my suggestion that the

citrate method was the only one used in France. It was so simple that it was possible to instruct a hundred men to use this method, while only one was being instructed to use the whole blood method. And while there may have been wounded men who might have been saved equally as well by salt solution as by citrated blood, I saw practically none actually injured, as Dr. Kimpton guessed, by the giving of citrated blood. Most of them were tremendously benefited by this blood, and many were actually saved. But after all it is the greatest good for the greatest number, and that is the way I feel about the use of citrated blood throughout the length and breadth of this country, indeed, throughout the world. For the practitioner in a small community, with no one skilled in the giving of whole blood—for it does require a great deal of skill and rapidity of operation to use this method—the citrated method is certainly the one of election. But when you have refinements that go with hospitals, and some one capable of giving whole blood, it is only reasonable to use this method in those cases in which the condition from which the patient is suffering is such that he should not be submitted to the unavoidable danger that accompanies the use of citrated blood.

THE RELATION BETWEEN THE CHILD AND HOSPITAL SOCIAL SERVICE *

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Hospital social service should find both its best inspiration and highest development in the case of the child. The compelling necessities of the young in sickness or distress and their usual reaction to the hospital are cogent reasons why the latter should afford only a temporary place of refuge. This, however, should form a vantage ground for careful study and efforts at permanent relief.

In the case of children, many attacks of illness are due to individual and social causes that can and should be remedied. When the child leaves the hospital, we must be prepared to utilize all possible home and community resources in preventing relapses or in completing cures. Our efforts must be integrated with all existing helpful agencies. From the hospital to the home, there are, frequently, unforged links in the chain of relief. The social problems of childhood have a far-reaching influence, since the needs of the child constitute the surest index of both family and social conditions.

While the hospital may be a house of refuge for the treatment of certain diseases when home conditions are not favorable, the stay of a child here should be as short as possible. Children, and especially infants, do not respond well to prolonged hospital care. As soon as acute symptoms of disease have passed, they should be discharged. Otherwise, there is liable to be a recurrence of the original disease or, since this is a most susceptible period, a development of one of the many forms of communicable disease or varieties of cross infection. In the case of infants, a slow wasting often takes place without any objective symptoms, frequently ending in hypostatic pneumonia. In older children, homesickness and general restlessness may seriously interfere with a favorable course of the disease. In order to insure speedy convalescence, the child should be carefully guarded from auto-infection and hetero-infection while in hospital, and discharged as early as possible.

TREATMENT AT HOME

After many years of observation within and without the hospital, I believe that a great number of cases of illness in young children can be treated better at home, if proper nursing is procurable. A comparison of the results of home and hospital treatment in such a common and widespread disease of early life as pneumonia, will tend to throw light on this subject.

The data given herewith were obtained in two New York institutions having a large infant service. In one of them, during 1920, there were 282 cases of acute bronchopneumonia, with 117 deaths; nineteen cases of chronic bronchopneumonia, with six deaths, and fifteen case of lobar pneumonia, with one death. In the other, during six months of last winter, there were forty-eight cases of pneumonia, with twenty deaths; the records do not specifically state whether the attacks were bronchopneumonia or lobar pneumonia, but undoubtedly most of them were the former. It may be added that these two institutions are among the best managed, with the most competent medical and nursing staffs in town. The same institutions, in 1914 and 1915, showed a mortality from bronchopneumonia of 48 and 53 per cent.,[1] respectively.

Table 1 shows the results of the home treatment of pneumonia cases by the Henry Street Settlement for four consecutive years:

TABLE 1.—RESULTS OF HOME TREATMENT OF PNEUMONIA BY HENRY STREET SETTLEMENT

Age	1916	1917	1918	1919
Birth to 2 years:				
Recovered	1,744	1,617	1,601	1,031
Died	178	193	240	139
From 2 to 5 years:				
Recovered	988	1,027	1,214	875
Died	43	45	75	39

There is no distinction made between lobar pneumonia and bronchopneumonia in these figures. It is only fair to observe that many mild cases of pneumonia are successfully treated at home, while the severer types and those doing badly are often sent to the hospital, which may partially explain the wide difference between the mortality of home and hospital.

A glance at the results (Table 2) of home care of diarrhea and enteritis during these years, by the same visiting nurses, may likewise be instructive.

TABLE 2.—RESULTS OF HOME CARE OF DIARRHEA AND ENTERITIS

Age	1916	1917	1918	1919
Birth to 2 years:				
Recovered	322	283	215	194
Died	33	32	24	22

These figures show what favorable results can be obtained at the home if good nursing can be secured. Here, again, many of the severe cases find their way to the hospital, where they swell the mortality rate; but the majority can be successfully treated at home, with a competent nurse at hand.

I believe that in work among sick infants and little children, the hospital feature can be reduced to a small unit, and more emphasis placed on home care. We must not overlook the educational value to the home of

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Chapin, H. D.: Pneumonia in Infants, J. A. M. A. **65**: 786 (Aug. 28) 1915.

such service, as the mother can learn much as to the future care and nursing of her family from these visits. In this way, it is possible to raise the whole standard of their living. If every infants' or children's hospital would thus reduce its inside work to a comparatively small unit, retaining its full medical and nursing staff to operate largely in the homes that supply the hospital, the best and most far-reaching results would be obtained, with the least expense. This would really constitute an enlarged and intensive form of hospital social service. The small inside service could be utilized for surgical operations, for severe illness requiring specialized nursing, and for scientific study of obscure cases demanding much laboratory service. In the few cases requiring hospital care, the stay would be short, as the corps of physicians and nurses would be available for speedy follow-up work after discharge. In this way, all possible benefits could be obtained from the hospital, without the disadvantages and dangers so often seen in the case of children. These efforts could be accomplished by an enlargement and a reorganization of the social service departments already in existence.

HOSPITAL SOCIAL SERVICE

The hospital could and should act as the health center of the neighborhood. To attain its widest usefulness, it should serve as a sort of social laboratory in which disease and distress might be traced to their ultimate sources. Only thus can relief be made permanent, and the recurrence of disease be prevented. This is preeminently true in the case of children. The child has always offered the best approach to a study of both medical and social problems.

It may be of interest to note that the broader conception of hospital usefulness, now known under the name of hospital social service, had its beginning in connection with children. Dr. Richardson states that the Children's Hospital of San Francisco started outpatient work about 1886, and early saw the folly of giving people medicine without knowing their living conditions. So they appointed one of their nurses to visit the home to give instruction in cooking and hygiene, and to supply extra diets when they were needed. The physicians acted as advisers to this nurse, and interested friends to contribute for individual cases. There were, however, no special records kept other than the financial bookkeeping demanded.

In 1890, I started a movement in connection with the children's division of the New York Post-Graduate Hospital, in an effort to make more permanent the work of this division of the hospital. Visitors were sent to the homes after discharge, to give relief when needed and to discover and report any faulty home conditions that might be remedied. The reason for this work lay in the fact that many children were coming back after an interval of time with a recurrence of the original disease or some other malady. For three years, we depended on two voluntary visitors, but they were women with special training and experience in social case-work. A history card was used in all the cases, so that the records could be studied and compared; but we have never employed the elaborate and complicated blanks now so generally in use. In 1894, a paid visitor replaced the voluntary ones, first, a woman physician, and, later, a trained nurse. From the first we have aimed to have the endeavors of the visitor expended in three principal directions: (1) In trying to make the medical relief given by the hospital to the individual as permanent as possible. This may mean immediate material relief in cases of necessity, or instruction in diet and other factors that may be required to further convalescence. (2) In finding out, if possible, the underlying cause that produced the particular sickness, so that a recurrence could be prevented. (3) In making a broad study of social conditions that make for sickness and disability in the community that is served by the hospital. This becomes necessary in order that a general knowledge, in reference to future prevention, may be acquired and constantly kept in mind. All essential requirements of modern hospital social service have thus been met from the beginning of this endeavor.

It is believed that this work has been of the greatest utility to our children during the thirty-one years that it has been systematically employed. Most of the children come from the lower east side of New York, which is probably the most densely populated spot on the globe.

A full history of the child's parentage, family and personal condition having already been taken by the examining physician on admittance, a pretty complete record can be placed in the hands of the attending physician for his guidance in managing the case.

In line with the idea that one of the ultimate objects of hospital social service is to study the social relations and problems of the individual so as to initiate broad measures of prevention, a number of efforts in this direction were instituted. Four intensive group studies have been made to learn the character of the morbidity, and how this is being influenced by social conditions. Thus, an effort has been made to get a social diagnosis, as well as to ascertain what individual influences are making for sickness and disability in the community. As already noted, the child offers the best chance for such a study because he connects directly with all lines of inquiry—housing, food, parenthood, the wage problem, faulty hygiene in tenement or town, education, and every other factor in community life.

The first group study included 1,000 cases, extending from March, 1900, to March, 1902. The times were hard, and the earning capacity of most of the families was very low. In 552 families, the income was totally insufficient to maintain a proper standard of living. The housing conditions were bad, principally from overcrowding, and 764 dark rooms were noted. Most of the parents were ignorant.

The next group investigated included 700 families, and the period extended from March, 1903, to March, 1904. Most of the families were living in great poverty. As an example, 304 families received a weekly income not exceeding $10, with many of them well under this figure. The housing conditions in most of the families were bad.[2]

Another group, investigated during a period extending from November, 1914, to November, 1916, included 1,000 cases. The earning capacity in most of the families did not show very much improvement over the data furnished thirteen and seventeen years previously. There were 557 large families (of more than five members), and 443 small families (of less than five members), on the list. An interesting point is that most of the families earning the higher wages were small, while the large families were almost invariably in the

2. Chapin, H. D.: Arch. Pediat., April, 1905.

low wage class. This may be of interest to birth control advocates. A marked improvement in the housing conditions was noted. This was undoubtedly due to better tenement house laws, both of construction and operation, which were doing away with dark rooms, rear houses, and other evils of past days. This forms a good example of how a social movement can improve conditions of life for the individual.

The final group study included 900 cases, from April 1, 1919, to April 1, 1921. The first and most marked contrast shown in this group was the great increase in earnings. Thus, 289 families earned between $20 and $30 per week; 296, from $30 to $40, and thirty, more than $40 per week. There was, however, little if any improvement in the housing conditions since the last study, for well known reasons. A majority of the families lived in three and four room homes, and as 389 families numbered six members or more, and 511 had from three to five in the family, the congestion can be appreciated. It is also seen that small families preponderated in this group. The visiting nurse, Miss Weiss, reports that while the earning capacity has greatly increased over that reported before the war, the cost of living has increased correspondingly, and that, while during the first flush of the fuller pay envelop some extra fineries might be indulged in, it is doubtful whether, in the diet of most of our families, any variety, greater than that noted years ago, is found. The increased cost of food and the increased rent do not leave the worker much better off than in previous years, even with the larger earnings. In many of the tenement homes, the rent now amounts to $6, $7 or $8 per room, and, in practically all, the rent is at least $5.

EFFECTS OF POVERTY AND IGNORANCE

It is always interesting to try to estimate the relative proportion of poverty or ignorance in the causation of disease in certain classes. At my request, our visitor recently tried to make an estimate of these factors:

In 171 homes, ignorance seemed to be the preponderating factor, and in 159 poverty alone appeared to be the principal cause of illness; while in 117 homes gross ignorance and poverty went hand in hand. However, during the two years covered by this study, one could scarcely call poverty the chief cause of overcrowding, since the housing shortage has been pronounced, and, even when unusually high rents were paid, proper homes were found with difficulty.

Our studies confirmed the conclusions of others, that poverty works particular hardship among the young, and that sickness is one of its leading manifestations. Many of our parents were likewise ill nourished and sickly looking. Poverty and sickness too often go hand in hand. The Charity Organization Society has found that fully two thirds of the cases of poverty which it is called on to investigate depend, directly or indirectly, on sickness. There is a shifting and alternating relationship of cause and effect between them. It is interesting to note how this vicious circle works at different ages. Thus, while in adult years, sickness is one of the principal causes of poverty, in childhood poverty is one of the principal causes of sickness.

While it is not contended that the social studies here noted are absolutely accurate, yet by taking cross sections at intervals of time, we can certainly arrive at helpful conclusions for individual prevention and social effort. They will at least serve to confirm and substantiate certain impressions that many have already had in mind.

As to causation, these 3,700 cases may be explained along three broad lines—insufficient earnings, bad housing, and ignorance on the part of the parents. These were the real underlying causes of these children's sickness. This means that the efficiency and earning capacity of many individuals must be increased, that overcrowding and unhygienic housing must somehow be overcome, and that a wide campaign of health education must be carried on in the community served by the hospital. If these endeavors are not undertaken, we are simply doing the veriest patchwork, dealing with effects and leaving causes alone. This likewise means that much of our good work will be ephemeral.

A prolonged study along these and similar lines on the part of physicians and hospitals will eventually disclose the part played by biologic causes requiring individual action, and those induced by social defects and maladjustments, which call for collective effort, if permanent and really constructive results are to be obtained.

OPPORTUNITY OF THE PHYSICIAN

The physician can and should become the law giver in social as well as individual ills. He, more than any one else, has opportunity to see life as it really is, stripped of illusions, and on the bedrock of truth. Certainly he is a surer guide in social affairs than some reformers with crude but well meaning specifics, or hysterical world-betterers who are liable to do more harm than good, in spite of benevolent intentions. Too much of the work of the wise consists in correcting the mistakes of the good. We must also take into account the evil done by the physical, mental and moral quacks, who fill the air with their shortcuts and specifics.

What is most needed is a patient, slow, exhaustive study of individual and social ills that will furnish data to guide the physician, social worker and legislator in inaugurating broad and comprehensive measures of prevention and relief. In social medicine lies one of the hopes of the future.

In possibilities of service, the hospital can be one of the broadest human institutions. In this, as in many other advances, the little child should lead.

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ABSTRACT OF DISCUSSION

DR. HENRY I. BOWDITCH, Boston: The social side of hospital work is the very vital part of hospitals. Get next to the pregnant mother. Get next to the mother after the child has come. Do not expect the mother to be normal until she has recovered her physical condition and her mental poise. If we can make the mother and the father realize what that child is, we have done big work, medically, physically and mentally. The child must be enlightened and taught the sacredness of truth. I have four different groups of parents who are interested in their children. Once a month they get together over their tables, going from one place to another. They talk of their children and they find out how daily life touches children, how the police department affects them, how the schools influence them, how the hospitals—how everything in life touches our children, and we see that it does the right thing.

DR. FRITZ B. TALBOT, Boston: I agree, in general, with what Dr. Chapin has said, and emphasize the principle of the full enlightenment of children, but I disagree with his lack of distinction between a social service worker and a home visiting nurse, and I also disagree with his statement

that real social service started in the nineties. In 1905 it was recognized that there was a difference between home nursing and social service. It was recognized that social service was a specialty which required special training and separate training from the care of children. And it was on that basis that Dr. Cabot established in the Massachusetts General Hospital social service work and the training of social service workers. I believe that that is the first real social service that has been done. The great distinction between a visiting nurse and social service worker is that the visiting nurse primarily takes care of the patient, and the social service worker primarily investigates the social conditions that are back of the physical conditions. Those two specialties are very separate, and I want to emphasize that a social service worker cannot be a nurse any more than a socially untrained visiting nurse can be a social service worker. The specialties are very definite and with definite limitations. I believe with Dr. Chapin that patients should not be kept in hospitals any longer than is necessary. We send them to their homes as early as consistent with their well-being and health. Our social worker is the link between our visiting service and the hospital. As soon as the patient comes into the hospital, the social service worker investigates the home and gets in touch with some home nursing organization under whose charge the patient will receive good medical home nursing. For example, instead of having cases of endocarditis in our wards for many days, we find out whether treatment can be carried out in the home, and if not, foster homes are selected and the patient is sent out for treatment.

Dr. R. S. Yarros, Chicago: In my opinion the apparent antagonistic attitude of most of the medical profession toward public health service is due, to a great extent, to the fact that it is a new manifestation in medical practice and is developing so rapidly that physicians who are by nature and training rather conservative are inclined to condemn it without giving it the thorough consideration it deserves. Whether they should be nurses instead of social workers, or both, is a matter for further consideration. But the fact is that all of us who have had long experience among the poor in their homes are absolutely convinced that such service is most needed if we are to do first class medical work —not only curative but preventive. The social service person who comes to the home of the patient and acquaints herself with the economic and sociological conditions of the patient is in a far better position to give instructions to the woman during pregnancy, especially if she is a nurse, and help her to prepare for confinement, as well as teach mother and father how best to care for the well child; and in case of illness—especially contagious diseases where quarantine is so essential—she can actually teach them how to accomplish it even under difficult conditions. She is practically preparing the parents in home nursing, cleanliness, orderliness, and how best to carry out the physician's orders. This phase of service has no doubt come to stay. It is a mistake for physicians to fight it. There are economic, social and psychologic aspects in treating diseases. The physicians have neglected them too long. The public is beginning to be suspicious of us. Let us take up these phases of work, study them carefully and use them for the healing of the sick as well as for the prevention of disease.

Dr. Charles Herrman, New York: As to the relative value of home and hospital treatment of infants and young children, my experience coincides with that of Dr. Chapin. I have observed the course of disease in the tenement, in private practice, in a hospital for communicable diseases, and in the children's ward of a general hospital. There are two great disadvantages in hospital treatment: the absence of individual care, which is especially important in infants, and the danger of cross infection. Even in the best hospitals the latter can only be reduced to a minimum, not eliminated. Take the mortality in one of the commoner communicable diseases, measles. I have treated consecutively 400 children, almost all under 5 years of age, in their homes, with a mortality of a little over 1 per cent. In the best hospitals it is rarely under 10 per cent. and often as high as 25 or 30 per cent. This is also the case in foundling and other asylums in which not the severe but the average run of cases is encountered. In a modern, properly constructed hospital, the expense of treatment is very great. It is a question whether the parents should be relieved of the responsibility of home treatment. The hospital treatment of infants and young children with communicable diseases should be limited to those who cannot possibly receive adequate treatment at home.

Dr. Henry Dwight Chapin, New York: I was astounded to hear Dr. Talbot say that a social service visitor could not be a nurse. That is not my construction at all. My conception of a social service visitor is a woman trained as a nurse, as a social worker and even as a physician. We do not make any such distinction in New York as to whether a social service visitor shall be a nurse or not. But the point on which I take issue with Dr. Talbot is this: In 1890 we started hospital social service. It was not home nursing. We tried three kinds of service, social visitors, the trained physician and the trained nurse. We have found a trained nurse with a social education the best kind of a visitor. From 1890 the work has gone on, but it is not simply home nursing. We have gone into the home to study and relieve causal conditions and have kept records for our guidance in these efforts. Thus, all the essential requirements of hospital social service have been met. The literature of April, 1905, will show that social service visiting was not started in Boston but in New York.

THE PSYCHIC FACTOR IN EXOPHTHALMIC GOITER *

ISRAEL BRAM, M.D.
PHILADELPHIA

The constant interrelationship between body and mind has been recognized from time immemorial, as emphasized by the dictum *Mens sana in corpore sano*. From the primary psychoses in which the psychic factor is predominant but in which secondary organic changes occur, to such primarily organic conditions as endocardial lesions or carcinoma of the stomach in which there is secondary distress expressed in moodiness, emotionalism, or even suicidal tendencies, many gradations are observed to substantiate the conclusion that the psychic factor plays its rôle throughout medicine.

In exophthalmic goiter, the observance of the psychic factor is manifestly of vital importance. I beg to state parenthetically that in this paper we are not concerned with the so-called "Basedowified" goiter, otherwise known as toxic adenoma, i. e., that form of hyperthyroidism superimposed upon an old-standing nontoxic goiter. We shall here consider true exophthalmic goiter—a condition not necessarily presenting exophthalmos or goiter, a disease the precise etiology of which is as elusive as the fountain of youth, an affection the symptomatology of which is as varied as the colors of the rainbow, a syndrome seemingly characterized by more vicious circles than are seen elsewhere in the domain of medicine—in brief, a disease presenting so great a confusion of structural, functional and psychic features for study that the keener the observer, the greater the problems still unsolved.

THE PSYCHIC FACTOR IN PATHOGENESIS

The study of the psychology of individuals during intense reaction to the instinct of self-preservation reveals a notable fact. During an earthquake, or a

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

fire in a large factory in which many are employed, or a massacre, or the wreck of a liner in midocean, on the firing line in battle, or in other situations of imminent danger to life, forty-nine out of fifty persons soon recover physical and mental poise after their experience and are themselves again. One of them, however, because of a singular susceptibility, may evince no psychic and endocrine recoil or adjustment to the previous functional balance. The trembling, the staring eyes, the cold, clammy skin, the heart hurry, and other features expressing fright, remain, become frozen or chronic, and we are confronted with a case of exophthalmic goiter. In but a small percentage of cases does the disease itself present hereditary tendencies; it is the psychopathic makeup or predisposing soil asserting itself in so-called nervousness, sensitiveness, high-strung temperament and the like, that is inherited. I find in at least 90 per cent. of my patients a clear history of psychopathic predisposition. In these persons, the factors concerned with emotionalism, i. e., the endocrines and the nervous system, are easily fired into hyperactivity. The threshold of nervous and emotional reaction is reduced; this peculiarity as the predisposing factor requires but the torch of an exciting cause in the form of an acute emotional strain of a sexual nature or disappointment in love, intense worriment or anxiety, fright or terror—and the conflagration of exophthalmic goiter is begun.

It is thus evident that the neurogenic theory in explanation of the etiology of exophthalmic goiter is attractive. As most observers are now convinced that in emotional disturbances the functions of the endocrines, especially the thyroid, suprarenals and pituitary, are also involved, we must conclude that the neurogenic and pluriglandular theories are interdependent, constituting one theory which we might term the *neuro-endocrine* theory.

The following instances of exophthalmic goiter taken from my records, each presenting a history of underlying psychopathic makeup, indicate the exciting factor to be acute emotional strain.

REPORT OF CASES

CASE 1.—Mr. E. G., married, a merchant, was seated in the back yard of his home one hot afternoon in July, 1910, when, by way of a practical joke, a friend approaching him from the rear turned the garden hose on him. A few weeks following this fright, he noticed that his collars were becoming too tight, though he was strangely losing in weight. Soon he complained of nervousness, palpitation, insomnia and bulging eyes, and within nine months the syndrome became so severe as to lead to cardiac decompensation and beginning anasarca.

CASE 2.—Mr. S. B., aged 34, married, a salesman, in June, 1913, was so affected by the death of his mother that he developed the typical syndrome of exophthalmic goiter within two months.

CASE 3.—Mr. M. R., aged 39, married, a merchant, in March, 1920, developed a very virulent form of exophthalmic goiter following extreme worriment over business troubles. Either as a coexisting eitologic factor or as a concomitant symptom in the syndrome, this patient's unreasonable sexual desires were bitterly complained of by his wife, who confided to me that at the time of his illness he had compromised his good moral standing by sexual relations with several women in his employ.

CASE 4.—Mr. R. L., aged 28, bachelor, a draftsman, who was referred for treatment in June, 1920, was a man of wholesome morals; but being engaged to be married and "keeping company," it seems that the internal conflict between chastity on the one hand and the strong sexual urge on the other was responsible for the syndrome of the *fruste* form of exophthalmic goiter of six months' duration.

CASE 5.—Mrs. M. B., aged 42, a housewife, had shortly after her marriage, fourteen years before, developed exophthalmic goiter, which she claimed was the result of intense marital and conjugal incompatibility. Her household has been a battlefield of expressed and suppressed hatred. Ten years ago a ligation was performed, four years ago, a lobectomy. When she was brought to my attention two years ago, she presented a very tragic picture of chronic exophthalmic goiter, with large regenerated goiter, marked exophthalmos with edematous eyelids, trembling of the entire body, heart enlarged to the left axillary space and in a state of delirium, and mind verging on a major psychosis.

CASE 6.—Miss L. B., aged 26, single, a mill hand, referred for treatment in September, 1917, presented exophthalmic goiter in marked form, which developed shortly after the announcement of her engagement in 1915. The history indicates that the intense sexual emotion incident to her engaged life was the exciting factor in the production of the disease.

CASE 7.—Mrs. J. T., aged 32, a housewife, whom I first saw in June, 1920, presented a very virulent form of the disease, of four years' duration, without exophthalmos and without goiter. The onset began a few days following a fright. This was in the nature of a diminutive mouse which ran across the floor while she was alone in the house one night.

CASE 8.—Mrs. S. S., aged 21, a housewife, referred for treatment in September, 1920, shortly after her marriage, one year before I saw her, began to suffer with extreme nervousness which culminated within six months in an outspoken picture of exophthalmic goiter. The history, taken in the presence of the husband, pointed very strongly to temperamental and sexual incompatibility as the exciting cause.

CASE 9.—Mr. J. McK., aged 32, married, a typesetter, was in 1917 employed in a munitions plant in which an explosion occurred; and though he received no bodily injury, he was so badly scared that he fell to the floor in a faint. A few days later, symptoms of exophthalmic goiter began to assert themselves, and within three months he was a typical subject of the disease. When I first saw him, nine months ago, there was a large pulsating goiter, enormous, delirious heart with a rate of approximately 180, trembling of the entire trunk, extreme emaciation, and all the other evidences conspiring to make this patient a most pitiable sight to behold.

CASE 10.—Mr. J. G., aged 47, married, a coinbox collector for a telephone company, was in 1910 a passenger in an elevator which dropped nine floors. He was taken home in a state of shock, and within a few weeks developed the complete syndrome of exophthalmic goiter. When he was referred to me in February, 1921, there was a medium-size vascular goiter, moderate exophthalmos, extreme tremulousness, a very irregular heart with auricular fibrillation, emaciation, and distressing bladder and intestinal irritability.

Time does not permit mention of many other instances of like nature.

THE PSYCHIC FACTOR IN SYMPTOMATOLOGY

The mental manifestations in a subject of exophthalmic goiter vary with the nature of the preexisting psychopathic makeup, the age, sex, culture of the individual, and the severity and duration of the affection. In the average early case, the brilliancy of the eyes is associated with apparent acuteness of thought. Cerebration is quickened, speech eager and hasty; attention is concentrated, though unsustained; and there is a multiplicity of interests evidenced by the facility and speed with which there is change of subject during conversation. Soon the relatives and friends observe a change in the patient's disposition, which in some instances may become alarming. There is a tendency to the formation of hasty conclusions, irritability, moodiness, and a heightening of the emotional response.

so that on the slightest provocation there is uncontrollable laughter, anger or weeping. As the syndrome advances in duration and severity, the symptoms are intensified, with occasional remissions. Insomnia, which is now distressing, plus the heart hurry, serves to accentuate the psychic manifestations. In the event of auricular fibrillation (which may occur a year or longer after the onset of the disease), periods of disorientation alternating with periods of bewilderment, confusion and excitement may occur. I have often observed instances of visual hallucinations with persecutary delusions during which the closest relative was regarded as a designing fiend or a murderer. The persistence of this status soon stamps the patient as one in whom the major psychosis must receive primary attention. Indeed, it is not too much to say that all subjects of unmistakable exophthalmic goiter have approached the arbitrary threshold of insanity and may suddenly step into this category at any time.

THE PSYCHIC FACTOR IN TREATMENT

The still prevailing uncertainty in the management of exophthalmic goiter is responsible for the three schools of treatment, represented by the surgeon, the roentgenologist and the internist. But though they differ in their respective mode of therapeutic approach, surgeon, roentgenologist and internist fully agree on the importance of psychotherapy as a necessary element in their armamentarium. The careful, experienced surgeon does not operate precipitously, but rather gradually, leading his patient on by smiles, a friendly attitude, and suggestive influences, to the point where the scalpel can be employed with the least operative risk. Also, he is careful to extend his psychotherapy into the postoperative future in the hope of complete recovery. The careful roentgenologist, whether he cooperates with surgeon or internist, or treats the patient alone, likewise knows the value of psychotherapy, and in his own way endeavors by word and manner to cheer and encourage the patient to a healthy mental attitude. The internist who has been eminently successful in the management of these patients knows that without skilful psychotherapy as an element permeating and controlling all his instructions, failure is probable; for on mental adjustment depends cooperation in treatment—the vital factor in therapeusis.

Since a comprehensive discussion of psychotherapy would involve the consideration of the mental evolution of man himself we must here confine ourselves to a few brief generalizations. The purpose of psychotherapy is (1) to inspire a healthy faith in the physician and his art; (2) to effect subjective harmony, i. e., to assist the patient to become a healthy self to himself; (3) to establish objective harmony, i. e., a harmonious relationship between the patient and his environment—a healthy faith in God and man.

The psychotherapist must himself be made of firm mental stuff, a keen student of psychology, a sociologist, possessing a magnetic personality, at once friendly and irresistibly commanding, with a clearly apparent sincerity of purpose. Psychotherapy as indicated in patients with exophthalmic goiter is not synonymous with psychoanalysis as popularly conceived. The study of the mentality in exopthalmic goiter is a distinct, perhaps an isolated field, requiring a medical attendant possessing a broad experience with these patients. In his efforts to discover the mental flaws of his subject, the physician must be able to enter into the patient's moods and win his confidence and admiration in a subtle, almost imperceptible manner, in order to make him feel that at last he has a true friend in his confessor, and that recovery is at hand.

The method of procedure in psychotherapy varies with the temperament of the patient, the environment, the culture and the financial status, and his personal peculiarities and idiosyncrasies. Conviction, persuasion and suggestion, each in varying dosage according to circumstances, are the instruments employed to reenforce the patient's will, overcome autosuggestion, and establish a state of mental adjustment consistent with intrinsic and extrinsic harmony. There is much good in each mental makeup; this good must be ferreted out and employed as a basis for the development of healthy cooperation.

Psychotherapy must extend even to relatives and friends, by a process somewhat similar to that directed toward the patient. However, when it is found that they are noncooperative, an appropriate institution is advisable for the patient.

The doctor must not permit himself to become the permanent instrument of psychic correction, but later he must outline or prescribe other means of mental adjustment, according to circumstances. In this category, always with an eye to individualization, is included the vocation of the individual, the social calendar, music, reading, conversation, attendance at lectures, and various other forms of diversion. Above all, the patient must be taught ever to keep the corners of his mouth turned upward; if he laughs outwardly, he will soon feel like laughing, and this becoming a habit, the victory is won.

CONCLUSION

It appears relevant to remark that the syndrome to which we apply the term exophthalmic goiter is not *goiter,* and the sooner this affection is removed from the classification of *goiter,* the sooner will a rationalization of therapeusis be effected. While nontoxic goiter and toxic adenoma are local conditions yielding satisfactorily to thyroidectomy, this cannot be said of exophthalmic goiter, the etiology and especially the symptomatology of which is as widespread as the body itself. Every organ and its function, every tissue, indeed, every cell of the patient is involved; and when thyroid swelling exists, it is not the cause of, but incident to or a link in the chain of events constituting the syndrome. Hence it is that in patients whose thyroids are not productive of marked pressure symptoms, whose vital organs are not too badly damaged, who are not insane, and in whom satisfactory cooperation is obtainable, the experienced individualizing internist obtains an excellent statistical showing. With the removal of any discoverable infectious foci, a properly outlined regimen of rest, diet, drugs and other measures, and a practical psychotherapy pervading the whole, there is effected a correction of physical and mental vicious circles; there is a restoration of emotional and endocrine balance; and this, without added shock, without scars, with almost no recurrences nor mortality rate. Such a patient, having been under the guidance of the physician for a year or longer, finally becomes self-supporting; evinces a stronger grasp on life and a healthier con-

ception of its meaning; possesses greater mental stolidity than ever, and is more than ever equipped to face the world "irreproachable and unafraid."

1431 Spruce Street.

ABSTRACT OF DISCUSSION

DR. TOM A. WILLIAMS, Washington, D. C.: Dr. Crile some years ago made the statement, in reference to cases of mild hyperthyroidism (with exophthalmic goiter or not), that he thought it necessary after thyroidectomy that the patient be sent to a convalescent home in the country for six months if the cure was to be permanent. He then went on to say that such patients made as great an improvement without thyroidectomy as did those who had been operated on. For ten years I have been trying to find an instance in which psychic trauma has been the agent, but I have not succeeded. Further, I have not considerably benefited hyperthyroidism by psychotherapy, save in a very few instances. Therefore, if Dr. Bram can so excite the admiration of the patient, he may have solved the issue which I have failed to do. He says one must apply the same psychotherapy to the patient's friends as to the patient, but that is even more difficult. If Dr. Bram has solved that problem, he may have given us the missing link which explains our failure.

DR. CHARLES H. MAYO, Rochester, Minn.: The points brought out in Dr. Bram's paper, that troubles of the central nervous system are responsible for exophthalmic goiter, that the thyroid may or may not be enlarged, without being the cause of disease, and that special kinds of rest are indicated for the cure of the patient, are of interest from an historical standpoint. Much more is known of the thyroid gland now than in the early days. Kendall has isolated the thyroid secretion, and Plummer and Boothby, from a study of the metabolism, have shown the effect of the lack of the thyroid gland in early life, and the effect of its loss in the adult. The effect of hypersecretion is known, as is the amount of secretion consumed by the body each day to maintain a metabolic rate. A small percentage of patients with goiter get well with or without treatment, and a very large percentage recover from the disease following surgical removal of varying amounts of thyroid tissue. The majority of these cases occur in the thirties, but I have seen a number of typical cases between the ages of 4 and 10 years, also a few at 60. No single form of medical treatment has yet been accepted by internists; they, however, plan many months of treatment, meaning disability and expense to the patient. If surgery is to cure, it should be instituted early, when the risk is no greater than that of operation for simple goiter.

DR. ISRAEL BRAM, Philadelphia: I was careful to say "by a process somewhat similar to that directed toward the patient," should psychotherapy be directed to the patient's friends and relatives. It is necessary to eliminate the psychic trauma directed toward the patient from other individuals, at least until such time as the patient's psychic condition is rendered more stolid. Confidence of the patient in the physician is vital to cooperation. Since admiration is a psychologic constituent of confidence, it follows that the former must obtain in the interests of satisfactory mental adjustment of the patient. Though we occasionally encounter refractory patients, the large majority of them are susceptible to proper management. From observation of a large series of cases of exophthalmic goiter, I wish to respond to the remarks made by Dr. Mayo, that though the mortality in his group is very small, it is still very high elsewhere among surgeons. But this is not the whole story. Many so-called cases of exophthalmic goiter cured by operation are really cases of toxic adenoma—a condition usually remediable by thyroidectomy.

The pathogenesis of exophthalmic goiter is a chronic one, often extending back for many years; indeed, the predisposition is frequently congenital. How can we expect to overcome this by surgical means and within a few weeks obtain recovery? In my series of patients, I have had 50 per cent. who, prior to the institution of nonsurgical treatment, had submitted to surgery in one way or another and were either partially or not at all improved, or were markedly worse off than ever. Though there is hyperthyroidism in exophthalmic goiter, hyperthyroidism is a mere incident in the syndrome, and to attempt thyroidectomy is to endeavor to remove a symptom which will recur as soon as the thyroid is regenerated; and then we are frequently confronted with a worse condition than that which existed before the knife was employed.

Clinical Notes, Suggestions, and New Instruments

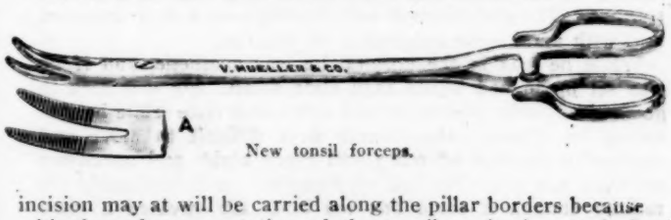
NEW TONSIL FORCEPS

L. P. WARREN, M.D., WICHITA, KAN.

To those who find dissection and snare the most satisfactory technic for enucleation of tonsils, the following method of using a modification of Sawtell's forceps may be of interest.

For the right tonsil the forceps are taken in the right hand with the blades closed, and carried as far to the left as the angle of the patient's mouth will permit until ready to grasp the tonsil. The distal or grasping portion of the blades is separated about three-eighths inch; the open blades are pushed deep into the tonsil. If the points of the blades when closed seize the so-called capsule of the tonsil, all the better. One locks the forceps handles and proceeds.

It will be found that the tonsil will evert much more easily because of the deep central, parallel fixation of the forceps blades: the central portion advancing under traction, while the poles are held stationary or are folded backward. The



New tonsil forceps.

incision may at will be carried along the pillar borders because with these forceps rotation of the tonsil on its long axis is readily accomplished so that the posterior pillar is easily seen, more so than with any other forceps with which I am familiar. It holds with great tenacity and gives the operator absolute control of the position of the tonsil.

For the left tonsil the introduction is better made with the left hand. The accompanying illustration shows the actual size of the grasping portion of the blades.

Schweiter Building.

A CASE OF ACRODYNIA*

PAUL W. EMERSON, M.D., BOSTON
Visiting Physician, Boston Floating Hospital; Junior Assistant Physician, Children's Hospital; Assistant in Pediatrics, Medical School of Harvard University

L. R., a boy, aged 4½, whose parents were healthy and had two healthy children, and whose past history was negative, was admitted to the Children's Hospital, Boston, Feb. 16, 1921, showing general weakness, loss of knee jerks, and redness and peeling of the finger tips and toes, which at first glance seemed on the one hand to be a case of multiple neuritis, and on the other, a postscarlatina case. I looked up the cases of acrodynia reported by Weston[1] and by Byfield,[2] and the case fits in so well with that disease that I believe it is worth reporting.

Six weeks before admission, he seemed tired, and after playing for half an hour, would want to sit down and rest. He did not want to eat anything, was constipated, and did not sleep well. His mother noticed that his hands and feet were

*From the Medical Service of the Children's Hospital.

1. Weston, William: Acrodynia, Tr. Sec. Dis. Child., A. M. A. 1920, p. 83.

2. Byfield, A. H.: A Polyneuritic Syndrome Resembling Pellagra-Acrodynia (?) Seen in Very Young Children, Am. J. Dis. Child. 20: 347 (Nov.) 1920.

cold. He could walk. Since the onset he had continued to be constipated and went three days without a movement. Itching of the legs and feet troubled him, but this could be relieved by salt water applications. He had lost much weight. His usual diet was milk, about 1 quart daily, bread and butter, one egg, meat or fish, candy, cake and raw fruit. He had had no vegetables. The water he drank was obtained from a well with iron piping. He had had no medicine and had had no preceding respiratory infection.

The patient was apathetic, with marked flabbiness and weakness of the muscles of the legs. In rising from a sitting position on the floor he used his hands in a manner suggesting knee-climbing. He showed no definite paralysis, but his hand grasps were weak, and there was a slight tremor in the fingers. The knee jerks were absent. He stood with a marked lordosis, and walked unsteadily.

It was difficult to make out any abnormality of sensation, but it was noticed that he did not mind the lumbar puncture at all, and he was not disturbed by the pricking of his skin to obtain blood for a white count. The skin was moist. Over the chest, abdomen and legs was a rash looking much like a heat rash. On the finger tips and toes, extending over half of the first joint, was a mild redness, diminishing gradually from the tip backward, on the dorsal surface, together with some peeling. A few of the nails showed some ridges near the matrix. The second toe of the left foot showed, beside the peeling, a vesicle-like lesion which looked as if it had broken.

The rest of the examination was negative. The white count was 7,800, the hemoglobin 80 per cent. The von Pirquet test was negative. The urine had a specific gravity of 1.022, and showed acetone and a few white cells. The spinal fluid was clear and came out at the rate of 60 drops a minute. It contained 6 cells to the cubic millimeter and reduced Fehling's solution. The globulin test with alcohol gave a + + reaction, and with ammonium sulphate a + reaction.

While he was in the hospital he was apathetic, and if he was set up in bed would soon slide down. He was seen to go to sleep while sitting up, and fell asleep once while he was eating his dinner. His bowels were difficult to move and required a laxative of some sort every night, and an enema the next morning. He had no desire for food, but would eat rapidly enough if some one fed him. He sweated a good deal. The redness in the finger tips and toes varied in degree, but was more marked on the fingers. There was no sharp line of demarcation.

February 21, he developed lesions looking like paronychia on the tips of the third fingers. There was no discharge from them, no tenderness, and they remained the same until he left the hospital.

February 23, his upper lip became much swollen, and there appeared on the under side, bordering on the mucocutaneous line, a yellowish lesion, running back 1 inch, irregularly circular, not indurated and not painful.

February 24, the white count was 12,800.

February 27, the rash on the left hip became confluent and deeper, possibly from friction with the bedclothes.

March 7, the urine showed acetone and a few white cells. The patient complained all the time of the itching of his feet.

March 15, he developed a small yellowish lesion on the tip of his tongue, in the median line, quite similar to the one on his lip, but much smaller.

The temperature during his stay was between 98 and 100.4; the pulse, between 110 and 150; and the respirations were, on the average, 25. His weight on admission was 31½ pounds; it was down to 27¾, but on March 3 was 29 pounds.

His parents requested his discharge and he was allowed to go home. He was far from looking wretched and did not burrow in the bedclothes. He lost no hair and no teeth, and his gums were normal. On discharge his lip had nearly healed, but otherwise he was the same as at entrance.

He had no treatment except rest in bed, fresh air, and forced feeding. His past history ruled out poisoning with a drug; and no food deficiency could be made out. Pellagra was considered, but was manifestly out of the question.

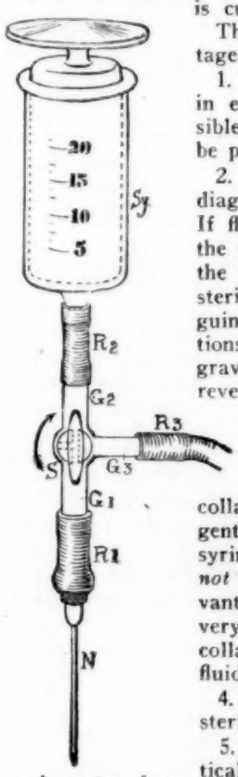
June 17 I received word from his mother that the child had completely recovered.

86 Bay State Road.

A SIMPLE AND INEXPENSIVE APPARATUS FOR DIAGNOSTIC OR THERAPEUTIC PUNCTURES*

ROGER S. MORRIS, M.D., CINCINNATI

Exploratory punctures, whether of the pleura, pericardium, joint, lung or liver (abscess, cyst), is a procedure which every clinician has occasion to employ frequently. A simple apparatus has been devised for this purpose. It consists of a glass T tube (*G* 1, *G* 2, *G* 3), with a two-way glass stopcock (*S*). This is connected with a needle (*N*) by heavy rubber tubing (*R* 1) and with a Luer glass syringe (*Sy*) of 20 or 50 c.c. capacity by means of light rubber tubing (*R* 2), such, for example, as a soft rubber catheter. A third piece of rubber tubing (*R* 3) may be added, if desired. The tubing is cut in convenient lengths.



Apparatus for diagnostic or therapeutic punctures.

The apparatus possesses several advantages:

1. It is inexpensive. All of the parts are in every physician's office, with the possible exception of the glass T, which may be purchased at small cost.

2. A single puncture suffices both for diagnostic exploration and for aspiration. If fluid is obtained, the syringe is filled; the two-way stopcock is then turned, and the fluid is ejected through tube *G* 3. A sterile test tube is filled for culture or for guinea-pig inoculation, and other portions are obtained for determining specific gravity, protein content and cytology. By reversing the stopcock and alternately filling and emptying the syringe, aspiration may be continued until the fluid is evacuated.

3. The light rubber tubing (*R* 2) collapses when a vacuum is produced by gently drawing on the plunger of the syringe, provided the end of the needle is *not* in the fluid. This is an obvious advantage; it serves as a useful guide. With very thick pus, however, the tubing may collapse, even though the needle is in the fluid.

4. The apparatus is easily cleaned and sterilized.

5. It is readily portable, occupying practically no space in the bag—a great advantage over the liter vacuum bottle usually employed. Thus, an aspirating outfit may be at hand always, when the physician is making his calls; and if exploration or aspiration is indicated, it may be done without delay.

6. The joints are simple, air-tight, and do not become clogged.

7. The apparatus is also suitable for intravenous injections.

APPARATUS TO AID IN DIFFERENTIATION BETWEEN AN OBSTRUCTION IN THE URINARY OUTLET AND PARALYSIS OF THE BLADDER

GEORGE WALKER, M.D., BALTIMORE

Inability to void may be due to an obstruction somewhere in the urinary outlet or to muscular weakness of the bladder. In not a few instances, patients have come under my care who have undergone an operation for a supposed prostatic obstruction, whereas in reality the condition had been due to a partial paralysis of the bladder muscle. In order to aid the diagnosis in these obscure cases and to study the bladder function with more precision, I have devised an instrument, which is represented in the accompanying illustration.

DESCRIPTION OF INSTRUMENT

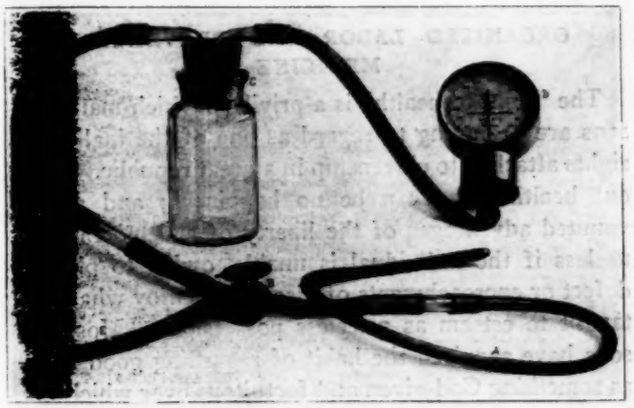
The instrument consists of a catheter (*A*), a two-way cock with three openings (*B*), a wide-mouthed 2-ounce bottle with

* From the Medical Clinic of the Cincinnati General Hospital.

rubber cork (*C*), an ordinanry blood pressure gage (*D*), and a piece of rubber tubing (*E*) for the purpose of introducing fluid into the bladder or letting it out. Connections are made with rubber and glass tubing. The stopcock has three openings so that by turning the valve the bladder can be connected alternately with the gage or with the tube. In this way water can be introduced into or taken out of the bladder. The empty bottle acts as a buffer and prevents the fluid from going into the gage. The whole instrument can be easily constructed at a very small cost, since the only expensive part, the pressure gage, is in the possession of every physician.

MODE OF USING

The whole instrument, except the pressure gage, is sterilized by boiling. The catheter is introduced into the bladder and the stopcock turned so as to evacuate any urine which may be present. One hundred cubic centimeters of sterile water is then injected into the bladder through the tube and the catheter, a syringe or a graduated gravity bottle being used. The valve is then turned so that the pressure in the bladder will be recorded on the gage. Another 100 c.c. is injected and a second reading made in the same manner, and so on until 500 c.c. has been introduced. The patient is now directed to exert his utmost effort to void the fluid. This pressure is registered on the gage and is recorded. One hundred c.c. is then evacuated and another reading is taken, and so on until 100 c.c. remains in the bladder.



Apparatus to aid in differentiation between an obstruction in the urinary outlet and paralysis of the bladder.

THE NORMAL STATIC AND VOLUNTARY INTRAVESICAL PRESSURE

A series of young and middle-aged men with normal bladders was selected and the static and voluntary intravesical pressure taken. The accompanying table shows the general average.

100	c.c.	of water, without voluntary effort	= 10	mm. of mercury.
200	c.c.	of water, without voluntary effort	= 12	mm. of mercury.
300	c.c.	of water, without voluntary effort	= 14	mm. of mercury.
400	c.c.	of water, without voluntary effort	= 16	mm. of mercury.
500	c.c.	of water, without voluntary effort	= 20	mm. of mercury.
500	c.c.	of water, utmost voluntary effort	= 120	mm. of mercury.
400	c.c.	of water, utmost voluntary effort	= 130	mm. of mercury.
300	c.c.	of water, utmost voluntary effort	= 150	mm. of mercury.
200	c.c.	of water, utmost voluntary effort	= 110	mm. of mercury.
100	c.c.	of water, utmost voluntary effort	= 80	mm. of mercury.
50	c.c.	of water, utmost voluntary effort	= 70	mm. of mercury.

With this apparatus we are not only able to differentiate between a weakened bladder and an obstruction in the urinary outlet, but also to determine the exact capacity of the bladder, that is, the full relaxing power. Our studies have also shown that in the condition commonly known as paralysis of the bladder, three distinct pathologic conditions must be taken into account: (1) a paralysis of the bladder muscle; (2) a paralysis of the sphincter muscle with no change in the bladder muscle, and (3) a tonic contraction of the sphincter which does not relax sufficiently to allow the patient to void.

These observations were made on adults in the recumbent posture; when made with the subjects in the sitting or standing position, the pressure was increased from 15 to 20 points.

The experimental work is being continued and will be reported later.

Charles and Centre Streets.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ARGYN.—A colloidal compound of silver oxide and serum albumin, containing from 25 to 30 per cent. of silver. The silver is in a form not readily ionizable.

Actions and Uses.—See general article, Silver Preparations, under Silver Protein Preparations, Argyrol Type, New and Nonofficial Remedies, 1921, p. 330.

Dosage.—Argyn is employed in from 10 to 25 per cent. "solutions" (colloidal suspensions), or even stronger.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent. U. S. trademark No. 137522.

Argyn occurs as black, lustrous, hygroscopic granules. It readily forms colloidal solutions with water and glycerin, but not with oils or with alcohol. A "solution" of argyn 1: 1000 is deeply colored.

To 1 Cc. of a 2 per cent. colloidal solution of argyn add 1 Cc. of sodium chloride test solution; no precipitate forms (*ionizable silver compounds*). To an acidified colloidal solution of argyn add 1 Cc. of ferric chloride test solution; a white precipitate is formed and the dark color of the solution is discharged.

About 1 Gm. of argyn, accurately weighed, is placed in a 500 Cc. Erlenmeyer flask; about 20 Cc. of strong nitric acid solution is added and the contents heated in the steam bath for one-half hour; about 200 Cc. of water is added and sufficient hydrochloric acid solution to precipitate the silver as silver chloride. The silver chloride is collected on a tared Gooch crucible, washed well with hot water, dried and weighed. The silver content corresponds to not less than 25 per cent., nor more than 30 per cent. of metallic silver.

CASEIN.—Caseinas.—The protein separated from milk by the action of acids or enzymes and purified. It contains not less than 15 per cent. of nitrogen, as calculated on the moisture-free material.

Actions and Uses.—Casein is used as a food, being added to other ingredients of the diet when it is desired to increase the content of protein in the diet. This occurs occasionally in the feeding of infants, in the nutrition of adult convalescents, and undernourished persons, and in the dietotherapy of diabetes. Casein is readily digested, furnishes phosphorus in addition to the usual amino-acid derivatives of proteins, and represents a protein of good nutritional quality. Casein is also used in the preparation of special foods for diabetics or others for whom a regimen poor in carbohydrate or fat may be desired.

Dosage.—The quantities which may be desirable to use vary widely in accord with the purpose of the feeding. Hence the dosage cannot be designated in definite terms.

Casein is soluble in ammonia water and in aqueous solutions of the fixed alkali hydroxides; insoluble in water, alcohol, ether, chloroform, or benzene. A suspension of casein in water slightly reddens blue litmus paper, but casein has both acidic and basic properties.

Char about 2 Gm. of casein, accurately weighed, extract with hot water, using 3 successive portions of about 10 Cc. each, dry the insoluble portion, heat it to obtain a white or gray ash (moistening with nitric acid if necessary), add the aqueous extract, evaporate the mixture, heat the residue, and weigh. The ash does not exceed 2 per cent. of the weight taken.

Weigh accurately from 1 to 2 Gm. of casein and dry it in an air oven at 100 C. to constant weight. The loss does not exceed 10 per cent.

Add 10 Cc. of water to about 1 Gm. of casein, accurately weighed. Mix thoroughly with a glass rod and allow to stand for 15 minutes. Transfer to a Rohrig tube or a separator with 10 Cc. of ammonia alcohol (1 volume of stronger ammonia water and 4 volumes of alcohol). Mix thoroughly to completely dissolve the casein. Add 25 Cc. of ether, shake thoroughly for half a minute, add 25 Cc. of petroleum ether and shake again for half a minute. Allow to stand for about 20 minutes or until the liquids have separated. Draw off the ether solution as completely as possible, filtering through a pledget of cotton into a weighed flask. Repeat the extraction with ether and petroleum ether, using 15 Cc. of each solvent. Evaporate the combined extracts and dry the residue at 100 C. to constant weight. The residue corresponds to not more than 1 per cent. of the weight taken.

Determine the nitrogen in a weighed quantity of casein by the Kjeldahl method. The nitrogen corresponds to not less than 15 per cent. of the moisture-free material.

PAPAVERINE SULPHATE-ROCHE (See New and Nonofficial Remedies, 1921, p. 211).

The following dosage form has been accepted:

Papaverine Sulphate Tablets-Roche, 0.04 Gm.

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SATURDAY, JULY 23, 1921

WHERE CAN A PERFECT CLIMATE BE FOUND?

Climatotherapy has been defined broadly as the use of climate for checking or preventing the development of disease, and for aiding the recovery of those who are ill or convalescent. If, indeed, the meteorologic conditions of a place or locality, if temperature and humidity and diverse other related factors are potent elements in determining the well-being of mankind, the physician has the imperative duty of learning where they are to be found within easiest reach for his patients. Hence the query: "What constitutes a good climate?" To this a well known climatologist [1] has frankly replied that "perfect" climates do not exist, that every climate has some disagreeable features. Health resorts are never equally desirable at all seasons. Ward regards it probably safe to say that every climate has advantages of its own for some special purpose, but some climates have more, and some have fewer, disadvantages.

Although scouting the idea of a perfect climate, Ward regards as a pretty general agreement among physicians, physiologists and climatologists that, excepting those who are distinctly ill, the best climate for most persons and most of the time is one that has frequent moderate weather changes; fairly marked annual and diurnal variations in temperature; a reasonable amount of cold during at least part of the year; a refreshing variety in the amount of cloudiness, and sufficient rainfall to provide enough moisture for the growth of grass and crops. Such a climate, Ward adds, is an intermediate one. It is neither invariably hot nor permanently cold. It is neither monotonously arid and cloudless, nor always dull and rainy. It is between all extremes. The climates of much of the so-called "temperate zones" are of this general type. Their physiologic effects are intermediate between those of the equatorial and those of the polar zones. They exercise the body's power of reaction and adaptation, keeping it physiologically active.

The search for a better climate frequently means, as every clinician well realizes, a change in something more than meteorologic environment. It is not the air for the lungs, the temperature for the skin, the altitude for the circulation, or such incidents that alone are sought. Social, mental and physical changes occasion their own beneficial or baneful transformations. Many of the advantages which rest, recreation, diversion, outdoor life, relaxation, altered diet, expert medical attendance and proper hygiene secure under the guise of a "change of climate" could frequently be secured at home with less real hardship to the patient. Frequently the home will become a health resort if it can be made a pleasure resort. In the case of specific diseases such as tuberculosis, we have gradually learned the importance of teaching the patients how to live at home. The burden of recovery is no longer shifted solely to the "resort" in a faraway place. Have we not neglected all too often the possibility of taking advantage of local climates? Perhaps it will become more popular in the future to seek health at home. Then the choice of climate will no longer require "a nerve-racking decision."

1. Ward, R. D.: Climate and Health, with Special Reference to the United States, Sc. Month. 12: 355 (April) 1921.

ORGANIZED LABOR AND PREVENTIVE MEDICINE

The "right to health" is a privilege which many persons are beginning to regard as one of the inalienable rights attached to citizenship in a great republic. Without health there can be no happiness; and all the vaunted advantages of the liberty of a democracy are useless if the individual is unable, owing to physical defect or encroachments of disease, to enjoy what he is taught to esteem as priceless possessions. Most persons have acquired the habit of regarding good health as something God-given and fortuitous over which they have no very direct control; or, realizing that health may be jeopardized by environmental conditions or personal neglect, they fall into the attitude of expecting either the state or the employer or some philanthropic organization to provide the safeguards and furnish the remedies which lead to hygienic happiness.

No one needs good health in greater abundance than the worker, yet he belongs in most instances to the group of those who are either ignorant of the menaces and the means to avert them, are indifferent to the wasting of human health, or not uncommonly are hoping for some outside help toward solving personal problems. Hence many have come to depend on the diverse social agencies, such as enlightened employers may furnish or charitable organizations may provide in the domain of preventive medicine. Mrs. Grace M. Bernheim [1] has struck a new and important keynote in a communication addressed to organized labor. She points out that the traditional attitude of the latter has been to look on workingmen's health as "the boss's business." Insisting that this is a serious mistake, she urges that a physical examination should be the worker's first introduction to his union. It should be closely

1. Bernheim, G. M.: A Health Program for Organized Labor, New York Call, March 20, 1921.

tied up with the local and its employment department. It should be the foundation on which the whole future of the individual rests. Knowing the needs of his body, he can select work for which he is fitted. Knowing his weak spots, he can build up his health.

If it is not entirely novel, it is at least unusual and unconventional in most trades for the union leaders to accept any degree of responsibility for their followers' health. The working hours, the scale of wages, the apprenticeship and many other items have long been solicitously guarded against unfair exploitation on the part of employers. Surely the union can afford to make an equal effort or investment in relation to the health of its members, one of its chief working assets. There is common sense in Mrs. Bernheim's insistence that the worker himself must learn how his body is affected by his work, by his food, by his pleasures. Of what use, she asks, are shorter hours, higher wages, even being a "great man," if the body is broken and the mind too sick to care? It is a splendid plea for the larger participation of organized labor in the aims of preventive medicine.

AN INTERPRETATION OF DEATH

Biologists have pointed out that the longevity of man is in a sense determined not only by the innate constitutional properties of the protoplasm of his living tissues but also by the possible appearance of adverse environmental conditions. The latter are to a considerable extent controllable; they can be averted or rendered less frequent by many precautions such as form part of the dictates of modern preventive medicine and personal hygiene. By improving the environment of the individual and limiting the likelihood of detrimental forces being brought into play against him, it is not unlikely that the average expectation of life may continue to be increased.

This possibility rests on the assumption, however, that the inherent capacity of protoplasm to grow and be restored is not self-limited. If senescence and death are necessary attributes of living matter, even ideal conditions of existence will sooner or later be without avail. Weissmann long ago concluded that originally protoplasm possessed "the property of potential immortality." Expressed otherwise, the living matter was assumed to be capable of reproducing itself indefinitely, if accidents, disease, etc., are barred. Others have argued that some sort of contribution from other protoplasm, as in copulation or conjugation, is indispensable to the continuity of life. The elaborate studies of Woodruff have shown, however, that this is not necessarily the case. He [1] has succeeded in maintaining a culture of *Paramecium* through reproduction by mere division of its protoplasm without conjugation for more than thirteen and one-half years during which time more than 8,400 generations were thus attained. Hence we may conclude with Woodruff that under a favorable environment the protoplasm of a single cell may be self-sufficient to reproduce itself indefinitely. This is essentially an asexual method of development. The long continued growth of the tissue cultures maintained by Carrel and his associates at the Rockefeller Institute point to a similar conclusion for certain types of mammalian cells.

It will then be asked why natural death is so inevitable in the higher organisms. To this question Pearl [2] has found an answer in the complexity of these forms of life—in the differentiation of structure and function in the body. It is, to quote Pearl, a complex aggregate of cells and tissues, all mutually dependent on one another and in a delicate state of adjustment and balance. If one organ for any accidental reason, whether internal or external, fails to function normally it upsets this delicate balance, and if normal functioning of the part is not restored, death of the whole organism eventually results. Protozoa may in a sense be immortal. Germ cells are likewise immortal. The modern transplantation experiments have demonstrated that certain somatic cells, such as tumors contain, may continue to live and grow indefinitely. But by their specialization the higher forms forego the power of independent and indefinitely continued existence. This is the price paid for the differentiation of special functions. Thus, says Pearl, if in such an interlocking and mutually dependent system any one part through accident or in any way whatever gets deviated from its normal functioning, the balance of the whole system is upset. If the departure of any part from its normal functional course is great enough to be beyond correction promptly through the normal regulatory powers of the organism, death of the whole will surely ensue.

NUTRITIONAL REHABILITATION

The chemist distinguishes between certain changes of state that matter may undergo by designating them reversible and irreversible. In these respective cases the product of the reaction can, in the one instance, readily be converted back into its precursor form. When an irreversible reaction takes place, on the other hand, the resultant substance can no longer be restored to exhibit its earlier properties. Thus, a soluble protein undergoes an irreversible reaction when it is converted with the aid of heat into insoluble coagulated protein.

Similarly, there are biologic changes in living matter which partake of an irreversible character. When they are of a sort that deteriorates the organism, a permanent undesirable effect is produced. There are bodily damages that can never be repaired. Certain functions may become perverted beyond the possibility of recovery. Interferences with growth and normal nutrition

1. Woodruff, L. L.: The Present Status of the Long-Continued Pedigree Culture of Paramecium Aurelia at Yale University, Proc. Nat. Acad. Sc. 7: 41 (Jan.) 1921.

2. Pearl, R.: The Biology of Death, IV, The Causes of Death, Sc. Month. 12: 49 (June) 1921.

not infrequently leave evidences of harm in the guise of dwarfed forms and malnourished persons. Are these changes likewise irreversible in character?

An affirmative answer has often been given to this question. It has been alleged, for example, that when once growth is retarded beyond the period during which it usually takes place, a condition of permanent stunting is likely to ensue. In their experiments on laboratory animals, Osborne and Mendel, as well as other workers, have clearly demonstrated, however, that the individual may be stunted by a variety of specific deficiencies in its food, yet subsequently recover when the diet is made adequate. More recently, Sherman [1] and his collaborators at Columbia University have attempted to determine whether this favorable outcome is also attainable when the stunting results from the use of an unbalanced dietary of ordinary food, simultaneously deficient in more than one factor, and particularly when the deficiencies are such as may frequently occur in human experience. A striking illustration of the positive results observed by them was obtained in the case of diets rich in bread. Animals which had been seriously stunted in early life by feeding on bread alone resumed growth at a normal rate and subsequently produced and reared healthy young when a liberal supply of milk was added to the cereal diet. This wonderful supplementary value of milk cannot be too often emphasized. The modern "nutrition classes" in some of the present day child-health activities bear similar testimony. The upshot of these evidences from now diverse sources is that we must not despair of the "nutritional rehabilitation" of individuals or families whose vitality has been reduced by living on unsuitable proportions of staple articles of food. For such persons it is rarely too late to thrive when the opportunity is given.

1. Sherman, H. C.; Rouse, M. E.; Allen, B., and Woods, E.: Growth and Reproduction upon Simplified Food Supply, I, J. Biol. Chem. **46**: 503 (May) 1921.

Current Comment

BRAIN LECITHIN

When a well known continental physiologist of the last century first made the oft-quoted remark that "our thoughts depend upon the element phosphorus," he doubtless had in mind the peculiar phosphorus-containing nitrogenous compound lecithin, first discovered in egg yolk by Gobley three quarters of a century ago, and soon thereafter reported by him to be present also in brain tissue. During the succeeding years lecithin, though ill defined by the chemists and always admitted to possess an uncertain chemical structure, remained as a striking characteristic of the organ on which our thinking, our feeling and, in ultimate analysis, our doing, depend. Whether current fashions in nomenclature happened to designate it as a lipoid, a phospholipin, a phosphatid or, perhaps, still differently, the substance originally known as lecithin continued to exercise a sort of mysterious spell in biochemistry. When, therefore, about ten years ago Fränkel and Linnert [1] denied the presence of lecithin in the brain tissue of man, many who had struggled in student days to memorize the elaborate structural formula of the leading chemical component of the central nervous system experienced the sensation which fruitless labor often evokes. Then, too, there were mysterious virtues in lecithin which the medical advertiser detected best of all. But the Austrian investigators were wrong. Lecithin is present in the brain. This assurance is now given by Levene and Rolf,[2] who have isolated and identified it at the Rockefeller Institute for Medical Research. Furthermore, the brain lecithin is found to have the same composition as that from egg yolk. The distinction between lecithins lies apparently in the differences of the character of their fatty acids. The fatty acids isolated from the egg lecithin are oleic, palmitic and stearic acids. The same acids were also isolated from the brain lecithin. Lecithin and the traditional "brain phosphorus" have been saved to keep the physiologist thinking about their functions.

1. Fränkel and Linnert: Biochem. Ztschr. **24**: 268, 1910; **26**: 44.
2. Levene, P. A., and Rolf, Ida P.: Lecithin, IV, Lecithin of the Brain, J. Biol. Chem. **46**: 353 (April) 1921.

COST OF MEDICAL EDUCATION AND TUITION FEES

The statement is being made that the cost of obtaining a medical education has so increased in recent years as to make it prohibitive except for the well-to-do. The facts do not warrant this statement. It is true that the cost of furnishing a medical education has greatly increased, but this has affected tuition fees to only a moderate extent. Fifteen or twenty years ago the majority of medical schools were meeting their expenses from students' fees, and some were declaring dividends; now it is considered quite impossible for a medical school to teach modern medicine unless, in addition to students' fees, it has a generous income either from state appropriations or from private endowment. The actual expenditures for the teaching of medical students by eighty-two medical colleges during 1913-1914 gave an average of $419 a year for each student, as compared with an average of $150 a year for each student paid in tuition fees. On the average, therefore, the expenditure was nearly three times what the student paid in fees. The tuition fee which each student paid in some medical schools was only one tenth or even less of the money expended for his instruction. With the general increase in the cost of maintenance since the World War, tuition fees have been increased, but not at all in comparison with the increased cost of furnishing the education. The highest fee now is $350 a year; in 1914 it was $250. There are still, however, about twenty high grade medical schools in which the fees are less than $150, and in ten of these they are less than $100 a year. Among the latter are several state university medical schools in which low fees are charged to students living within the state. At the same time, greater provision has been made for deserving but needy students than previously in that more than 300 free scholarships and generous loan funds

have been established in about forty of our better medical schools. Aside from the higher living expenses, the cost to the student for obtaining a medical education is only slightly higher than it was fifteen years ago.

THE DESTRUCTION OF LEUKOCYTES FOLLOWING PROTEIN THERAPY

Marked leukocytosis accompanies a variety of more or less clearly differentiated clinical conditions. In addition to the classic leukemias or leukocythemias a number of diseases are known that give rise to somewhat similar blood pictures. In view of the obscure etiology of most of these conditions, and particularly of the uncertain significance of the large increments in one or another of the types of white blood cells, a critical student cannot avoid doubt as to the real wisdom of those modes of therapy which lead to a wholesale destruction of the increased numbers of leukocytes. The methods used are essentially empirical, yet they have found considerable application in the current management of the leukemic disorders. Application of roentgen rays has found vogue, and is justified by the alleged selective action which the rays are said to have for cells of the lymphocytic and myelocytic type. During the decade following the demonstration by Selling that benzene is a leukotoxin, this substance has been employed in the treatment of certain forms of leukemia, and the employment of radium has also been suggested. Another method of producing a leukopenia or decrease in circulating leukocytes has been described by Gow [1] from the Medical Clinic of St. Bartholomew's Hospital in London. A rapid diminution in the number of all forms of the white cells in the peripheral circulation is stated to follow the intravenous injection of so-called "peptone," usually a mixture of the products of the peptic digestion of proteins. The phenomenon was noted incidentally by earlier investigators, who were unable to account for the disappearance of the leukocytes; for peptone has no leukocytolytic action in vitro. This type of leukopenia, which usually is followed by a transient polymorphonuclear leukocytosis, would have little more than academic interest except for the fact that the intravenous injection of peptone has been recommended for several years by the Belgian clinician Nolf in the treatment of septic infections. The procedure is admittedly a drastic one, and considerable further study is required of this as well as of many other forms of specific protein therapy.

ACIDEMIA AND ALKALEMIA

Although the expression "acidosis" has long been in use, having been coined by Naunyn many years ago, its precise meaning appears of late to have become somewhat confused. Originally it was applied to what has sometimes been termed acid intoxication, that is, to conditions in which large amounts of nonoxidized organic acids are formed in metabolism and circulated in the body. Beta-oxybutyric acid, aceto-acetic acid (so-called diacetic acid) and lactic acid are illustrations of the types of chemical compounds just referred to. One of the consequences of the circulation of such products, that is, of an acidosis in the original sense, may be a lowering of the content of carbonates in the blood. This led Van Slyke and Cullen a few years ago to introduce the expression "decreased alkali reserve" to denote this condition. It has found wider acceptance with us than abroad. Meanwhile, evidence has accumulated to show the existence of conditions of the blood in which the reverse status applies; that is, there may be a relatively high content of carbonate, to which the expression "alkalosis" has fittingly been applied. Instances of such possibilities, notably in relation to tetany, have repeatedly been discussed in THE JOURNAL. Poulton [1] has recently pointed out anew what many American workers have long regarded as unfortunately confusing, namely, that the word acidosis is being employed by investigators and others to signify increased acidity as exemplified in increased hydrogen ion concentration. Changes in reaction sufficiently marked to justify reference to such conditions rarely occur in fact, owing to the composition and equilibrium phenomena of the blood whereby the reaction is kept extremely constant. According to Poulton, it was proposed at the meeting of the British Medical Association in Cambridge that increased and diminished hydrogen ion concentration should be known as "acidemia" and "alkalemia," respectively, and that diminished and increased alkali reserve should be designated as "acidosis" and "alkalosis," respectively. It would be well, in the interest of uniformity as well as accuracy in scientific nomenclature, if English-speaking investigators would adopt this or some other widely acceptable solution whereby confusion will be avoided in the future.

SENSORY FACTORS AND TOBACCO SMOKING

The physiologic action of tobacco has long been a subject for acrimonious discussions in which prejudice and propaganda often seriously distort the judgments of the disputants. It has taken a long time to unravel fact from fiction in the behavior of alcohol so as, for example, to demonstrate conclusively that it almost invariably acts as a depressant rather than as a true stimulant in the body. Tobacco is today also a popular theme for scientific and pseudoscientific controversy. Many have wondered how the widespread habit of smoking is to be explained, and observations by Mendenhall [2] at the Dartmouth Medical School may throw some light on the custom. In studying the sensory thresholds of trained persons, both smokers and nonsmokers, to faradic stimulation, it was noted that the effect of smoking was conditioned on the state of the sensory mechanism at the time of observation. If the person's threshold was at or near normal, smoking was not usually effective in changing it; whereas if his threshold was low, indicating high irritability or nervousness, smoking often depressed the irritability. On the other hand, if the person's sensory mechanism was in a depressed state (with a high sensory threshold), then smoking had a stimulating effect in the sense of

1. Gow, A. E.: Certain Effects of Peptone Injections in Septicemia, Quart. J. Med. **14**: 187 (Jan.) 1921

1. Poulton, E. B.: Acidosis and Alkalosis, Correspondence, Brit. M. J. **1**: 508 (April 2) 1921.

2. Mendenhall, W. L.: Effect of Tobacco Smoking on Human Sensory Thresholds, J. Pharmacol. & Exper. Therap. **17**: 333 (May) 1921.

lowering the threshold. The depressant effect of smoking was much more marked than was the stimulating tendency. Rest accomplished the same sort of restoration of the threshold for sensory stimuli to the normal, though the effect of smoking in this respect seemed to be more marked. The psychophysiologic measurements made at Dartmouth harmonize with the statements of those who experience a stimulating action of smoking when they are depressed, and a depressing effect when they feel nervous or irritable. Smokers will find in this research a justification for the belief that the use of tobacco under certain conditions may lead to such sensations or feelings as approach the normal most nearly; that is, an adjustment which brings the smoker to a physical state which is desirable because normal in its sensory features. Of alcohol it has been said that, whereas it may at times be a blessing in disease, in health it is mostly a detriment. Perhaps it will eventually appear that the smoking of tobacco also has a variety of effects, the importance of which depends on the state of the smoker quite as much as on the pharmacology of the smoke.

PROGRESS IN THE TREATMENT OF LEPROSY

The latest reports [1] of the progress of the investigations which Dean and his medical and chemical confrères in the Hawaiian Islands have been conducting in recent years on the treatment of leprosy deserve careful study. The problem, which has frequently been discussed in The Journal, has involved many disturbing factors complicated by the difficulty of determining with certainty whether leprosy has actually been cured in the individual cases treated. There can be little doubt, however, that a potent remedial agent resides in some of the fatty acids which can be separated from chaulmoogra oil. The first larger group of successful cases in which the newer discoveries were applied were treated by the use of mixed ethyl esters of chaulmoogra oil acids carrying 2 per cent. of iodin in chemical combination. Intramuscular injections were supplemented by oral administration of a similar product. In the latest series the iodin has been omitted without noteworthy difference in the favorable outcome of the treatment; and the oral dosage has likewise been discontinued because it has failed to give any evidence of added advantage in respect to the period of treatment or the character of the results attained. Furthermore, two definite constituents of chaulmoogra oil, chaulmoogric and hydnocarpic acids, have been separated and employed in the form of esters therapeutically with obvious success. Thus, the practice of treatment has become simplified to involve the injection of ethyl esters of one or the other of the two chemical compounds noted. An opportunity is now offered to the chemist to prepare a variety of similar products for tests of their possible superior value in the important work of curing lepers. The "last word" has not been spoken; but a truly great advance has been made in the demonstration of a chemically distinct type of substance with potent remedial properties.

1. McDonald, J. T., and Dean, A. L.: The Constituents of Chaulmoogra Oil Effective in Leprosy, J. A. M. A. 76: 1470 (May 28) 1921.

Association News

THE ST. LOUIS SESSION

Dates Announced for Annual Session in 1922

The next annual session of the American Medical Association will be held in St. Louis, May 22 to 26, 1922. The Board of Trustees has appointed Dr. Robert E. Schlueter, St. Louis, Chairman of the Local Committee of Arrangements. The committee will establish an office in the headquarters of the St. Louis Medical Society, 3525 Pine Street. All communications for the attention of the Local Committee of Arrangements should be sent to that address.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Chiropractor Sentenced to Term in Jail.—It is reported that on May 26, H. A. Kitelle, chiropractor of Los Angeles, was sentenced to ninety days in jail on the charge of practicing medicine without a license.

GEORGIA

Venereal Institute Clinic.—More than 200 physicians of Georgia attended a series of lectures and clinics on venereal disease control at Emory University, Atlanta, July 11-16.

ILLINOIS

Personal.—Dr. Charles E. Humiston, Chicago, president of the Illinois State Medical Society, appeared before the House Committee at Washington, D. C., on Monday, July 18, in opposition to the Sheppard-Towner bill.

Chicago

Personal.—Dr. Alfred S. Burdick has been elected president of the Abbott Laboratories, to fill the vacancy caused by the death of Dr. Wallace Calvin Abbott. Dr. Burdick has been associated with the Abbott Laboratories for more than seventeen years, and for the last six years has been vice president and assistant general manager.

INDIANA

Muncie Academy of Medicine.—At the last meeting, before adjourning for the hot months, which was a joint meeting with the state board of health, Dr. George Crile, Cleveland, spoke on the "Control of Mortality in Abdominal Operations for Cancer."

Public Health Survey.—Dr. Murray P. Horwood, Massachusetts Institute of Technology, is conducing a public health survey of Tippecanoe County during July and August, under the auspices of the Tippecanoe County Tuberculosis Association. The purpose of the survey is to ascertain the condition of the factors affecting the public health and to formulate a program for the improvement of the public health, based on the findings of the survey. It will include an investigation of the water supply, sewerage and sewage disposal, refuse collection and disposal, milk supply, sanitation of food stores and restaurants, school sanitation, school hygiene, organization and activities of the health department, hospital facilities, antituberculosis activities, vital statistics, and analysis of the city budget.

KENTUCKY

Typhoid Fever Outbreak.—An outbreak of typhoid fever in Kentucky prompted Surgeon-General Cumming to send Asst. Surg. M. V. Ziegler to Louisville to confer with state and city health authorities and to assist in the application of control measures in the epidemic that is spreading in the city of Louisville.

MARYLAND

Personal.—Dr. Maurice C. Pincoffs has been appointed professor of medicine and head of the department of medicine in the Medical School of the University of Maryland, to succeed Dr. Gordon Wilson. This is the first step in the reorganization of the whole medical school, which was made possible recently by members of the medical faculty placing their resignations in the hands of Dr. Albert F. Woods, president of the university. Under the new administration, several of the present staff are expected to be asked to remain. Dr. Pincoffs is a graduate of the Johns Hopkins Medical School, class of 1912.——Dr. Ysidro Espinosa, chief medical officer in charge of the child hygiene bureau in the department of health, Mexico, is in Baltimore studying the methods of similar work in operation in this city.

MINNESOTA

Personal.—Dr. William F. Wild, Clarkesdale, Miss., recently with the Rockefeller Foundation, has been appointed executive secretary of the Minnesota Public Health Association, to succeed Dr. Hibbert W. Hill, who resigned last year.

NEW JERSEY

Election of Health Board Officers.—At its annual reorganization meeting, July 6, at Trenton, the state board of health elected Dr. Harry Spence, Jersey City, president, and Dr. Thomas B. Lee, Camden, vice president.

NEW YORK

Conference on Public Health.—The annual conference of public health officers and public health nurses of New York state will take place, September 13-15, at Cornell University, Ithaca.

Personal.—Because of failing health, Dr. Hortense V. Bruce has resigned as superintendent of the New York State Training School for Girls at Hudson, to take effect on August 1.

Dinner for Health Department.—The Yonkers department of health held a dinner, July 15, to celebrate the first anniversary of the establishment of the department of health. During the year Yonkers has had the lowest death rate and the second lowest infant mortality rate among second class cities of the state of New York.

The One Hundred and Second Medical Regiment.—At the state camp of instruction, at Peekskill, July 9, Col. Lucius A. Salisbury, division surgeon for the Twenty-Seventh Division, N. G., N. Y., was sworn in as colonel of the new One Hundred and Second Medical Regiment, and will take control of all the medical activities of the state guard. This regiment is the first to be organized and federalized, and will be the model followed by the National Guard of other states.

Appeal for Medical Volunteers.—In view of the lack of experienced physicians in the Orient capable of conducting postgraduate work, the American Jewish Physicians' Committee has issued an appeal, through its president, Nathan Ratnoff, to experienced physicians and surgeons throughout the country to volunteer for medical instruction service in Palestine. The courses are planned to assist medical men and medical missionaries working in the East, and will be nonsectarian. The committee hopes to found a medical college in Palestine as a gift from American Jewish physicians.

Health Legislation.—Among the new laws and amendments to existing laws relating to public health passed by the last legislature are the following:

Chapter 249.—Authorizes second and third class cities to create public health departments in place of boards of health, and provides for full-time health executives who will be known as commissioner of health in second class cities and health officer in third class cities. The term of office of such officials is made four years instead of two as at present. No person will be eligible to such appointments, unless he is a physician or surgeon, licensed to practice under the laws of New York State, has practiced as such or been engaged in public health work for a period of five years and has complied with the qualifications prescribed by the public health council. Exception is made in the case of physicians who have received the degree of doctor of public health in an institution recognized by the University of the State of New York.

Chapter 509.—Empowers county boards of supervisors to establish a general health district which may include the county or any part of the county or parts thereof; except that no first or second class city, and without its consent, no third class city, may be included in such district. The act makes provision for the continuance of present existing local health districts, and for the completion of the term of office of present local health officers.

Chapter 708.—Repeals the narcotic drug law and abolishes the department of narcotic drug control. All books, papers, records and documents are turned over to the state commissioner of health, but no duties are transferred.

Chapter 510.—Provides for a division of sanitation of the state department of health and transfers certain duties heretofore assigned to the state department of health to the state engineer.

Chapter 130.—Empowers board of supervisors in counties not having a tuberculosis hospital to appoint and employ such public health nurses as such board may deem proper.

Chapter 263.—Empowers board of supervisors in counties not having a tuberculosis hospital to organize and operate clinics for the medical examination of persons who are or may be suffering from tuberculosis.

Chapter 248.—Empowers county superintendants or overseers of the poor to utilize in addition to hospitals, such sanatoriums and boarding houses as are approved for such purposes by the state commissioner of health for the care and treatment of indigent sick persons.

New York City

Personal.—Dr. Henry W. Frauenthal, medical director of the Hospital for Joint Diseases, will sail, July 27, to visit the various modern hospitals in England, France and Italy.——Dr. Arnold Knapp sailed for Europe, July 16, on the Royal Mail Steam Packet *Oropesa*.

Physician's License Revoked.—A report from the board of regents of the University of the State of New York states that the license of Dr. Samuel J. Bernfeld was revoked, June 20, 1921, on the ground that Dr. Bernfeld has been convicted of conspiracy to evade the Selective Service Act.

New Jewish Memorial Hospital.—Plans for the new Jewish Hospital to be erected at Dyckman Street overlooking the Hudson have been completed. It is proposed to utilize as a part of the hospital a building now in the grounds. This will undergo reconstruction and a new wing will be added so that the capacity of the new institution will be 165 beds. The completed structure will cost about $350,000 and will be dedicated to the memory of the Jewish soldiers, sailors and marines who died in the World War.

Test Right to Treat Drug Addicts.—Indicted in the federal court on the charge of violating the Harrison Narcotic Law, it is reported that Dr. Morris Behrman expects to make a test case of one of the indictments. Dr. Behrman is charged with having given a prescription to a Pullman porter for 150 grains of heroin, 360 grains of morphin and 210 grains of cocain. The demurrer is on the grounds that the dispensing of drugs by the physician was in the course of his professional practice only; that there is no allegation that he wrote the prescription with criminal intent, and that there was a desire on his part to cure the addict.

OHIO

Physicians Honored.—The Allen County Medical Association held a special meeting and banquet recently in honor of Drs. Jonathan B. Vail and Enos G. Burton, Lima, and Newton Sager, Lafayette, each of whom had been in active medical practice more than fifty years. Drs. Vail and Burton, both graduated the same year, 1871, at the Ohio Medical School, now the Ohio and Miami Medical School of the University of Cincinnati.

OREGON

New Officers of the Oregon State Medical Association.—At the recent meeting of the state medical association, the following officers were elected for the ensuing year: president, Dr. Abram L. Houseworth, Marshfield; vice presidents, Drs. Edward B. McDaniel, Portland, George E. Houck, Roseburg, and Henry E. Pernot, Corvallis; secretary, Dr. T. Homer Coffen, Portland, and treasurer, Dr. Jessie N. McGavin, Portland.

North Pacific Medical Association.—At the meeting of the Tri-State Medical Association, referred to in THE JOURNAL, July 16, there was organized the North Pacific Medical Association, to comprise Oregon, Idaho, Montana, Utah and British Columbia, which will meet annually, independently of the different state medical associations. Dr. John Earle Else, Portland, will serve as chairman, and Dr. Homer Dudley, Seattle, will serve as secretary, until the first annual meeting, which will probably be held in Vancouver.

PENNSYLVANIA

Tuberculosis May Be Quarantined.—According to a recent statement of the state health department, tuberculosis, being classed as a communicable disease, may legally be subject to quarantine— as in the case of smallpox, scarlet fever or diphtheria—when a patient fails or refuses to take the necessary precautions to protect others from infection.

Philadelphia

Opium Seized.—More than $2,000 worth of opium was seized, one Chinese was arrested and another escaped, July

14, when Agent Unfreed of the narcotic division of the International Revenue Department raided a Chinese laundry at 909 Locust Street. Opium was secreted in secret compartments in the wall, floor and stairway.

Schools on Insanitary List.—Sixteen out of the 328 school buildings in the city are given a rating of "bad" in the annual sanitation survey presented to the board of education at its regular meeting by Dr. Walter S. Cornell, director of the medical inspection division of the public schools. The survey lists seventy-seven buildings as "excellent"; ninety-four as "good," and thirty-two as "poor," in addition to those already mentioned as "bad."

The Temple University School of Medicine.—In the reorganization of the School of Medicine, the following have been elected full-time professors: Dr. David Gregg Metheny, professor of anatomy and histology; Dr. Joseph Garrett Hickey, professor of physiology; Dr. William H. Reese, professor of chemistry; Dr. Max H. Bochrock has been elected clinical professor of neurology and will be visiting neurologist to the Samaritan and Garretson hospitals; Dr. Albert Strickler has been elected clinical professor of dermatology, and becomes visiting dermatologist to the Samaritan and Garretson hospitals.

TENNESSEE

Election of Officers of State Medical Board.—The state board of medical examiners, at its annual meeting, June 27, at Nashville, elected Dr. William I. McCreary, Knoxville, as president, to fill the unexpired term of the late Dr. Ambrose McCoy, Jackson. The other officers elected, were: vice president, Dr. Benjamin L. Simmons, Nashville, and secretary, Dr. Alfred B. DeLoach, Memphis.

UTAH

Personal.—Dr. James Earle, Salt Lake City, who during the war had charge of the eye department of the American Aviation Training Station at Issoudon, France, has recently been appointed as a surgeon in the U. S. Army and ordered to report for duty at the government hospital at Biltmore, N. C.

WISCONSIN

Department of Public Health Nursing.—The governor has signed the bill creating a department of public health nursing. A director of nursing will be appointed sometime before September, and the work of the department will be reorganized along the lines set forth in the bill. The measure was supported by the nursing organizations of the state.

Public Health Laws.—The last legislature appropriated $51,000 per year for general administration for the state board of health; $41,250 for venereal disease control work; $13,300 for the bureau of communicable diseases; $5,000 for supervision of public comfort stations and rest-room construction, and $31,000 during the first year and $21,000 the second year, for the bureau of child welfare and public health nursing. Former appropriations of $7,490 per year for laboratories and $1,500 per year for silver nitrate for the prevention of infant blindness, were renewed. A full-time health officer was provided for all cities of 25,000 or more. Vaccination of schoolchildren at the expense of the municipality, except where parents choose their own physician, was also provided for. Pneumonia and epidemic encephalitis were made reportable diseases.

CANADA

Ontario's New Marriage Law.—Section 2 of the amendments passed last session of the Ontario legislature gives power to the provincial secretary to issue to ministerial applicants or church authorities on their behalf, certificates of registration, and stipulates that, where it is apparent that any person registered has ceased to possess the qualifications entitling him to be registered, he may annul such registration and revoke his authority to perform marriages. The right to perform marriages is extended to properly ordained clergywomen. The enforcement of these amendments is to come into effect, October 1. The registration is taking place under Dr. John W. S. McCullough, of the provincial board of health. Heretofore the privilege of issuing marriage licenses was in the hands of the jewelers of Ontario, but now it is taken out of their hands and vested in municipal clerks; and only duly registered clergymen of recognized denominations may legally perform the marriage ceremony.

GENERAL

Special Course for Physicians.—The Graduate School of the University of Minnesota announces a special one-year course in ophthalmology and otolaryngology, to begin Sept. 28, 1921.

American Nurses' Memorial in France.—The cornerstone of the new Florence Nightingale Training School for Nurses at Bagatelle was laid, June 5, by Miss Helen Scott Hay, Savannah, chief nurse of the American Red Cross in Europe, on behalf of Miss Clara D. Noyes, Washington, D. C., president of the American Nurses' Association and chairman of the fund for the memorial, who was unable to be present. The school is dedicated to the memory of the 284 American nurses who gave their lives in the war, and it will be built with money collected through the three national organizations of America—the American Nurses' Association, the League of Nursing Education, and the National Organization for Public Health Nursing.

Infant Mortality.—According to a recent report, issued by the Children's Bureau, on infant mortality in the registration area since it was established in 1915, Pittsburgh lost more babies in proportion to its births in each year of the five-year period, 1916-1920, than any other of the nine large cities in the area. In 1920, there was a loss of one infant in every nine—the rate varying in different parts of the city from 64 per thousand in the most favorable ward to 157 per thousand in the most unfavorable. Nearly one half of the babies who failed to survive died before they were a month old, and nearly one fourth of the deaths reported were caused by gastro-intestinal diseases. Washington, Philadelphia and New York showed the most satisfactory progress toward a reduction of rates, though Minneapolis has consistently maintained the lowest rate of all of the nine cities.

Medical Week in Kansas City.—The Medical Association of the Southwest, the Medical Society of the Missouri Valley, and the Medical Veterans of the World's War are planning to hold a combined meeting, October 24-28, at Kansas City, Mo. The committee of the Medical Veterans of the World's War is arranging a series of clinics for the mornings at all the Kansas City hospitals. The afternoons will be devoted to scientific sessions of both the other societies. The Midwestern Association of Anesthetists will be organized and will present a program, October 25. The Jackson County Medical Society will arrange special entertainments, which will include a golf tournament and a dinner dance at one of the country clubs. Arrangements are also being made for special home-coming festivities for the graduates of the University Medical College, and one evening has been reserved for alumni dinners for representatives of the various colleges and universities attending the session.

Development of Medical Education in Brussels.—Mr. H. Goosens-Bara, as official delegate from the hospital board of the city of Brussels, and Mr. J. B. Dewin, who has been appointed by the city of Brussels as architect of the new hospital of St. Pierre—a public hospital to be used as a teaching hospital of the medical school of the University of Brussels—have come to the United States in connection with a plan for the development of facilities for medical education in Brussels. The Rockefeller Foundation is contributing more than $3,000,000 for new buildings and endowments for the medical school of the University of Belgium. The laboratories and classrooms of the medical school will be entirely rebuilt and redeveloped on a new site adjoining that of the municipal hospital of St. Pierre, which is also to be rebuilt and reorganized. The new hospital will contain 350 beds with a well equipped outpatient department, laboratories and accommodations for teaching and research. As a part of the general plan, a nurses' training school is being established in memory of Edith Cavell and Madame Depage. Mr. Goosens-Bara and Mr. Dewin will be the guests of the Rockefeller Foundation while investigating hospital administration in this country. They will also visit hospitals and medical laboratories in Great Britain on their way back to Belgium.

LATIN AMERICA

Street Named for Dr. Gorgas in Havana.—The name of Virtudes Street in Havana has been officially changed to "Mayor Gorgas," and metal plates with the new names have been affixed.

Radium in Brazil.—The *Brazil Medico* announces that Dr. Cleef, professor of chemistry at Bello Horizonte, reports the discovery in Minas Geraes of a mineral substance hitherto unknown, which possesses great radioactive properties.

Memorial to Nuñez.—A statue of Dr. Enrique Nuñez has been erected at the entrance to the grounds of the García Hospital at Havana, the construction of which was due to his initiative. He was long chief of the national public health service.

Finlay Park in Havana.—The park that has been constructed opposite the headquarters of the national public health service in Havana has been named for Dr. Carlos J. Finlay, and a fine statue portraying him was recently unveiled. It stands in the center of the park, and it is proposed to place in the corners of the park statues of the three members of the American commission which, with Dr. A. Agramonte, confirmed the transmission of yellow fever by the mosquito, as Finlay had suggested.

Personal.—The new monthly published at Mexico, *Medicina*, states that Dr. A. Román has resigned the chair of medical pathology in the National Medical School of Mexico, and Dr. J. T. Rojas has been appointed in his place. The latter has been commissioned by the medical faculty to go to Europe on a special mission, and Dr. Canale is to serve pro tem.——At the same school Dr. E. Cervera has been appointed professor of microbiology.——Dr. J. Azpuru España has been appointed professor of anatomy on the medical faculty of the University of Honduras.——Dr. H. Valenzuela has returned to Tegucigalpa from a trip to foreign medical centers.——Dr. Miguel H. Alcívar has been elected vice rector of the University of Guayaquil.

Campaign Against Yellow Fever.—In Brazil where yellow fever was formerly prevalent from Rio along the east coast and the Caribbean littoral to the Amazon and up the Amazon Valley to Yquitos in Peru, the infected area has been gradually reduced to a relatively small region on the east coast. The disease seems now to be confined to a zone along the coast from Pernambuco to Bahia. These ports are regarded as the endemic foci from which the infection is distributed from time to time over the surrounding region. Recent reports indicate relatively high stegomyia mosquito index, particularly in Pernambuco. One or two epidemics of minor importance during the year were brought under prompt control. Active measures are being carried out under the direction of the Brazilian National Department of Health which has provided adequate funds for the purpose.

On the west coast of South America the government of Ecuador has declared the country free of yellow fever, no case having been reported since June, 1919, a period of more than two years.

Before the infection had been exterminated in Guayaquil, it appeared in epidemic form in the department of Piura just across the Ecuadorean border in northern Peru. Here it had spread over a considerable area before attracting the attention of government authorities. Some months later, in 1920, the Peruvian government instituted active measures under the direction of Dr. Henry R. Carter, of the U. S. Public Health Service, and the epidemic was promptly suppressed. No reinfection has occurred in this department.

Before completion of the work in Piura, however, the infection had been introduced from this region into the department of Lambayeque, further south, and again had spread over an extensive region before being detected and reported. Here with a more dense population and a high stegomyia index the epidemic became relatively severe. Early in 1921 the government took charge of this second epidemic. Dr. Henry H. Hanson has been placed in charge with full authority. Funds for the work are being supplied by the government and the International Health Board. Dr. Hanson and his staff seem to be getting the situation in hand. Recent reports indicate a steady lowering of the mosquito index and a corresponding fall in case reports.

The situation in Mexico and Central America seems most encouraging. Health authorities have been disposed to regard Merida, Yucatan, as an endemic focus of yellow fever of long standing. In the transcribed records of the early Maya civilization there are references to epidemics of a disease in this region, the principal symptom of which was the vomiting of blood. The mortality appears to have been so great that vultures came into the homes and devoured the bodies before other disposition could be made of them. The last visitation of the blood vomiting disease, which is referred to in the records as the fourth, has been interpreted to have occurred during the year 1648. Sanitarians have looked upon Merida as the seed-bed from which the fever has spread from time to time, to appear in epidemic form throughout Mexico and the Central American countries. Within the last two years epidemics of more or less severity have occurred in east and west Mexico, Guatemala, Honduras, Nicaragua and Salvador.

The war against yellow fever is now on in all these countries. The plan of operations made possible by a fine spirit of international team play brings all the work under unified administration. In each country the government has created under its national department of health a yellow fever commission and has given to this commission full authority to deal with the situation. The simple device of making one man director of each of these commissions has effected the necessary concert of effort. The region to be covered is a large one. First attention is being given to strategic centers with particular concentration on Merida, Yucatan.

There seems to be no yellow fever at the present time in and about Merida and only a few sporadic cases have been reported within the last two months anywhere in Mexico.

For more than four months no case has been reported from any of the Central American countries. The rainy season, the period of greatest danger from yellow fever, is now coming to an end. Those who are responsible for the work understand, however, the importance of continuing energetic measures against mosquitoes. The plan of operation provides for holding the mosquito index below the danger point for at least a year after the last reported case of yellow fever.

FOREIGN

Statue of Professor Fuchs Unveiled at Vienna.—A marble bust of Prof. E. Fuchs, the Vienna ophthalmologist, was unveiled, June 14, the occasion being his seventieth birthday. He retired in 1915.

Rollier's Graduate Course in Heliotherapy.—A theoretical and practical course in heliotherapy is to begin at Leysin, Aug. 16-20, 1921. Address the Secrétariat Médical de M. Rollier, Leysin, Switzerland, for further details.

The Donders Memorial.—A large statute of Donders, the great Holland ophthalmologist and physiologist, was recently unveiled with much ceremony at Utrecht where he had been professor of ophthalmology and of physiology until his death in 1889.

Memorial to Achúcarro.—A tablet has been placed in the provincial hospital at Madrid commemorating the work of Dr. Achúcarro, the promising young histologist whose research had carried his name far before his untimely death a few years ago.

International Physiotherapy Congress.—The *Medicina Ibera* states that the date of the Sixth International Congress on Physiotherapy has been appointed for May, 1922. Professor Calatayud is to preside at the meeting, which is to be held at Madrid. Dr. Bartrina Costa is the secretary-general.

The Roentgen Institute of the Dresden Gynecologic Clinic.—The inauguration of this new institution occurred June 1. It was organized by means of donations from America to a total of 274,000 marks; the sum for this special purpose was raised by a concert in New York.

Venereal Disease in Germany.—The *Deutsche medizinische Wochenschrift* states that the collective inquiry in regard to the number of cases of venereal disease in medical care during the last month of 1919 has yielded the preliminary figure of 136,000 cases, that is, 2.2 for each thousand inhabitants.

Medical Legislators in Italy.—About eighty physicians were candidates for the national legislature at the last elections, according to the *Riforma Medica*. Twenty-three were elected, including Dr. Raffaele Paolucci, the hero of Pola. Eleven who had previously been members of the lower house failed of reelection.

Prize to Dr. Friedrich.—At the recent annual meeting of the German specialists in digestive and metabolic diseases, the 1,000 mark prize of the Ismar Boas Foundation was awarded to Dr. L. von Friedrich, assistant at the Frankfort medical clinic, for his work "Influence of the Act of Mastication on Secretion in the Stomach in Health and Disease."

New Medal for Medical Profession.—The Council of the Royal Society of Medicine, at the annual general meeting, July 6, made the first award of its gold medal to Sir Almroth Wright, F.R.S. (London), in recognition of his valuable services to medicine during the war. The medal is to be awarded triennially for original discovery in medicine and other allied sciences, or for the practical application of the results of previous investigations of other scientists, or for the most valuable contribution in any other way toward the progress of the art and science of medicine, preventive medicine, or surgery.

Graduate Courses in Germany.—A course on exotic pathology and medical parasitology is announced to open at Ham-

burg, September 19, in the Institute for Marine and Tropical Diseases. The twelve lecturers include Giemsa and Nocht. ——The German Radiotherapy Society is organizing a series of course: one, especially intended for gynecologists, opens under Wintz, August 1-6, at Erlangen. A course on radiotherapy for tuberculous affections will be held, October 3-8, at Freiburg. A graduate course in dermatology is planned for the fall at Hamburg in the Arning clinic and the lupus institute. For information on the radiotherapy courses address Prof. H. Meyer, Parkallee 73, Bremen. The third international graduate course at Karlsbad is announced to open September 11-17. Dr. E. Ganz of Karlsbad is in charge.

Official Expression of the Gratitude of France.—The *Presse Médicale* for June 29 gives a list of Belgians and others to whom the silver medal de la Reconnaissance Française has recently been awarded. The list contains the names of three American physicians: Dr. Carroll Bull, a collaborator of Carrel. The medal is awarded, it is said for his "immense services in scientific research and as assistant to Carrel." The other recipients are Dr. J. P. Hoguet and Dr. MacRobert, physicians to the French Hospital in New York, where they are said to have rendered "signal aid to French soldiers and marines on service in New York and to other persons of French nationality during the war." One medal was awarded to Dr. Max Jessurun of Harlem, the Netherlands. He is said to have been the moving spirit in the Harlem committee which provided free hospital care for French children and free medical care of the French refugees in Harlem during the war, and helping to ameliorate conditions for them.

Arrangements for Foreign Assistants in Paris Clinics.—The *Paris Médical* announces that the Paris medical faculty has now decided to accept foreign physicians as assistants in its clinics. Those desiring such a position must apply to the dean of the faculty with credentials and a letter of recommendation from the dean of their own medical faculty. The credentials are examined by a special committee and laid before the faculty board. If accepted, the candidate becomes assistant in the clinic for a period not less than three months or longer than one year. At the conclusion of his service he receives a certificate signed by the president of the university and registered at the ministère de l'instruction publique. Another advantage of the plan is said to be that some of the professors will allow the assistants to serve as *moniteurs*, thus associating them with the teaching force. Our exchange adds that competition for service as interns in the hospitals is also open to foreign candidates, saying that many physicians of various countries have served a term as intern in the Paris hospitals. The address of the medical faculty is merely Faculté de Médecine de Paris.

German Scientists Make Prohibition Appeal.—An appeal to the profession in Germany, signed by Kraepelin, Abderhalden, Strümpell and Gaupp, is being published in the German medical press. The appeal states "About fifteen thousand million marks are spent annually for alcoholic beverages in Germany. A large proportion of German grains, potatoes and sugar are diverted annually to the production of liquor. Our children and students are being fed by the Quakers in the lands of our late foes, and already we are hearing from these Quakers the reproach that while they are voluntarily imposing privations on themselves to carry on this charitable work in order to help us, we Germans are squandering such vast sums on alcohol and tobacco that with the tenth part of this expenditure for luxuries the distress of the children in Germany could be done away with." . . . "Is such a condition as this compatible with the dignity of Germany, and is it to be borne that the authorities on the questions of feeding our suffering people can look on placidly while the people are thus in heedless folly destroying the future and bringing contempt on the nation? Alcohol and tobacco are not indispensable, they are actually harmful for some; they are a terrible drain on the economics of the land, they hinder the progress of our children and grandchildren and their escape from the hard yoke now pressing so heavily upon us. What we need is an iron will, unwearied industry, good common sense and nourishing food with its economical utilization." The appeal urges physicians to dispel the illusions in regard to alcohol, and combat the frivolous heedlessness of the masses so that history may not record that the profession failed in its duty during the time of the country's greatest distress. The *Münchener medizinische Wochenschrift* commends this appeal and urges the profession to work for national prohibition, like that in America. "What was possible in America, must be possible also in Germany."

Registration of Syphilitics in Denmark.—The central laboratory of the national public health system in Denmark inaugurated last year a card index for all the specimens of serums sent in for analysis by physicians. A special form is used by which, without infringing on professional secrecy, each syphilitic thus listed can be identified and his case history traced through the years. Five data are recorded for each case: sex; day and year of birth; the initial of the surname; the date when the disease was first diagnosed; the name of the first physician or institution giving treatment. Dr. O. Jersild is in charge, and he has recently published in the *Ugeskrift for Læger* a report on the first six months' working of the institution. There are now 10,000 cases thus card-catalogued. The institution aims merely to serve like the central office of the telephone service. Every physician sending in the above data, or even the first three, of a case is at once put in touch with the physician or physicians or institution which have given this individual patient treatment before. On each card is entered the date of each course of treatment, the name of the institution, the institution's register number for the case, and the Wassermann findings at the time. As the enquiring physician is thus enabled to supply these data, it is an easy matter for the hospital or physician to give him the desired information in regard to details of treatment, etc. As the years pass the value of such a record will become more and more apparent, as the outcome of the case can be compared with the exact treatment, dosage, etc. Jersild has invented a name for this card index, the kartothek, using the last syllable in the Danish word for library, as if we should say card-ary instead of libr-ary.

Deaths in Other Countries

Dr. **V. Urbantschitsch,** professor of otology at the University of Vienna and author of numerous works on the embryology, etc., of the ear, aged 74.——Dr. **C. Moreau,** president of the Tournai Union Médicale, Belgium, aged 81.——Dr. **T. Schilling,** a leading internist of Nürnberg.——Dr. **Tirso Luis Crespo,** chief of the public health service in Placetas, Cuba, aged 54.——Dr. **J. Paes de Carvalho Sobrinho,** a rising ophthalmologist of Rio de Janeiro, aged 34.

Government Services

Training Division in Surgeon-General's Office

By order of the Secretary of War a training division has been established in the Surgeon-General's Office of the Army under the direction of Brig.-Gen. Walter D. McCaw. General McCaw will assume these duties in addition to his duties as commandant of the Army Medical School at Washington. His chief assistant is Lieut.-Col. Robert U. Patterson. The training division will have general supervision of all training in the Medical Department of the Army, including the Medical Field Training School at Carlisle, Pa., Army Medical School at Washington and all reserve officers medical training schools established at the various universities in the country. General McCaw began his work on July 1.

Tuberculosis Wards in General Hospitals

Opening of tuberculosis wards in all the general hospitals is being recommended by the U. S. Public Health Service, thus giving support to a recent resolution adopted by the American Medical Association. Such a move, according to the statement issued by Surgeon-General Cumming of the Public Health Service, will be of enormous benefit, not only to most of the 2,000,000 known victims of the disease in the United States, but also to thousands of others in whom the disease is incipient and easily suppressable if promptly treated.

MEDICAL OFFICERS, UNITED STATES NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA

Los Angeles—Castle, C.
Lowell, C. H.
San Diego—Elliott, R. D.
San Francisco—Ehrenclou, A. H.

DISTRICT OF COLUMBIA

Washington—Hiden, M. B.
Troxell, J. W.

MASSACHUSETTS

Chelsea—Shoenfeld, D. D.

VIRGINIA

Haymarket—Lightner, G. H.
Norfolk—Gilmer, W. P.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 27, 1921.

Graduate Medical Teaching in London

The report of a postgraduate medical committee appointed by the minister of health to investigate the needs of physicians practicing in this country and other graduates for further medical education in London has just been issued. The continent, and in particular Vienna, has long been regarded as the place where medical graduates can most easily secure what they need in the way of general and specialized instruction. An opportunity now presents itself for providing in this country a center at which students from overseas, whether from our own colonies, from America or from foreign parts, may find facilities for graduate medical instruction; and the metropolis, with its unique supply of clinical material and its 38,000 beds, seems singularly well placed to provide such a center. Cottage hospitals, it is urged, should be used to a greater extent than at present for increasing the experience and efficiency of physicians. All physicians should have the facilities for bringing their own patients into the wards, and of attending them there. The chief recommendation is for the establishment of a central postgraduate hospital and school, which should be devoted to graduate work. It is not recommended that a new hospital should be built. The hospital should be one equipped in an up-to-date fashion, with at least 300 beds, and a fully developed outpatient department. Associated with it would be the great special hospitals of the metropolis. One of the existing undergraduate schools might be converted into such a center. The committee also recommends the institution of a central office, which would link up graduate study in the United Kingdom, and in due course with that of the continent of Europe and America; and an institute of state medicine, directly connected with the University of London and under its administration, occupying a position analogous to that held by the Institute of Historical Research. The institute, in addition to providing instruction in public health, would furnish courses in forensic medicine, toxicology, and in industrial medicine. It would accommodate students from overseas and foreign countries, and create an imperial link between them. The scheme would involve an annual charge of $140,000.

Impotence Quoad Hanc

A case of considerable medicolegal importance has been decided in the divorce court. After nearly ten years of married life, a woman withdrew from cohabitation with her husband and instituted a suit for nullity of marriage on the ground that the husband was unable to consummate the marriage. He denied this and alleged that sexual intercourse had taken place. The evidence showed that the relations between the parties were not normal. The war accounted for the delay in bringing the suit. In giving judgment the judge (Lord Birkenhead, the Lord Chancellor) pointed out that the allegation was not that the respondent was generally impotent but that he was incapable of consummating this particular marriage. Doubt had been entertained as to whether impotence quoad hanc (that is to say, with regard to the particular woman in question) entitled a woman to a decree of nullity, but before and after the Council of Trent the Church had admitted and indeed enjoined nullity on that ground. Recent authority on the point was, however, scanty. Difficulty arose from the parties being the only important witnesses. In this case the medical evidence as to the physical conditions observable in the petitioner and the respondent was important. It was consistent with the petitioner's evidence and not with that of the respondent. Her story might be true; his could not. He therefore accepted hers as to the material facts and found that the marriage had never been consummated, and that over a period of years the respondent tried unsuccessfully to consummate it. It followed that he had always been incapable of consummating this particular union with this particular woman. There was no allegation against her of frigidity, denied access or physical malformation. The judge therefore granted her a divorce.

The Hospital Crisis

The financial difficulties of the voluntary hospitals resulting from the effects of the war have been mentioned in previous letters. The position became so serious that the minister of health appointed a committee to consider the position and make recommendations. Its report has just been published. There are in Great Britain 952 voluntary hospitals containing 52,194 beds. In some cases the governing bodies have been able to meet the difficulties caused by the war without permanent injury to the institutions under their care; but the position of a large number of hospitals is such as to make it improbable that they can be continued on a voluntary basis unless prompt and vigorous measures are taken to reestablish the position of 1914. The receipts have not fallen off—indeed, they have increased; but the cost of provisions, drugs, dressings, fuel and labor has so grown that it far more than counterbalances the increase of income. Unless some remedy is found there will be deficiencies in the present year in respect of the hospitals in the whole of Great Britain, including London, amounting to not less than $5,000,000, and this without provision for the necessary extensions and improvements. The position thus disclosed appears to involve danger to the whole of the existing voluntary hospital system. Two of the large London hospitals (King's and the London) have recently closed some of their beds owing to lack of means, and others have indicated their intention to take a similar course. If any considerable number of hospitals should close down, the shortage of accommodation would be such that the public would be compelled to step in and supply the deficiency, and the position of the hospitals throughout the country would be imperiled. It has been suggested that liability for the hospitals should be taken over by the state or thrown on the rates, or at least that a regular yearly grant in aid should be made from one of those sources. The committee considered that either proposal would be fatal to the voluntary system. If this system falls to the ground hospitals must be provided by the public, and the expense of so providing them would be enormous. They must then be carried on without the aid of the voluntary subscriptions and donations estimated at not less than $15,000,000 a year, and presumably without the income (about $5,000,000 a year) from endowments which were given to support only voluntary hospitals. But the money loss to the state would be a small matter compared with the injury that would be done to the welfare of the sick for whom the hospitals are provided, the training of the medical profession, and the progress of medical research. The combination of the hospital with the medical school is of inestimable value to both. On the one hand, the teaching of medicine would be ineffective without the opportunities for observation and experience which the hospital affords, and, on the other hand, the constant presence in the wards of teacher and student and the desire of both to maintain the reputation of their hospital are an incentive to care and vigilance in the treatment of the sick. The voluntary hospital system, which is peculiar to the English-speaking peoples, is part of their heritage; and it would be lamentable if by our apathy or folly it were suffered to fall into ruin. The committee thinks

that the voluntary system can be saved by a more systematic appeal for donations, by increased weekly contributions out of wages from the classes who use the hospital, and by increased payments. But in order to tide over the present acute difficulty, it recommends that Parliament should vote a sum of $5,000,000.

Professional Secrecy Again in the Courts

The unsatisfactory position arising from courts of law in this country in not recognizing the obligation of professional secrecy has already been referred to in these columns. The recent arrangements of the Ministry of Health for the free treatment of venereal diseases has raised the difficulty in a new form, for it is provided in the regulations that "all information obtained in regard to any person treated shall be regarded as confidential." In a case before Mr. Justice Horridge in the divorce court the question arose when the husband's lawyer called a physician who had treated his wife. The physician asked to be relieved from giving evidence, and claimed privilege as such. He referred to the regulation mentioned above. The judge said that the Ministry of Health had no power affecting the jurisdiction of the courts; physicians were subject to the orders of the court and must disclose what they knew. The physician said he was placed in a painful position by this ruling. The judge replied, "I cannot see that. You are bound to observe the regulations not to disclose voluntary information you have obtained; but so far as giving information which you are bound to give in assisting the administration of justice, it is your duty to give it." The physician then gave the evidence required.

The Rockefeller Foundation in London

Mr. George E. Vincent, director of the Rockefeller Foundation, and Mr. Wickliffe Rose and Mr. Victor G. Heiser, members, have arrived in London to confer with representatives of the Colonial Office on the problems of tropical diseases. It is possible that the foundation will assist research by grants. The government gave a dinner, to which leading physicians were invited to meet the representatives of the foundation. Mr. Churchill, colonial secretary, who presided, welcomed the guests and made an eloquent speech on the benefits conferred on mankind by tropical medicine.

Overpopulation

Addressing members of the Economic Circle of the Lyceum Club on "Progress and Population," Mr. Harold Cox said that Malthus in 1798 was the first to deal with the problem of limiting the population. He said that there was a tendency for the population to increase beyond the nourishment provided for it. Unless the growth of the population was checked by prudential methods, it would inevitably be brought to an end by cruel methods, such as starvation or war. In various places we had famines; among others, in India and China, two countries which together contained nearly half the whole population of the world. A large proportion of that population was living on the verge of starvation. The resources of the world were exhaustible, and already we could see signs of exhaustion. We had to dig deeper for our coal, and this would inevitably come to an end. Nations were competing with each other, notably Japan and Australia. Such rivalry was the outcome of the population problem. People thought the problem was remote, and, with a great deal of unction, repeated the Biblical text to be fruitful and multiply. This illustrated the power of the constantly repeated word: These words were probably said to Noah when there were only eight people on the earth. It seemed awful that people should be engaged in producing children doomed to die within a few weeks of birth. During many centuries our population had not grown appreciably, but we had not suffered by this. There was no brighter era in our history than the reign of Queen Elizabeth. Bacon had said, "Numbers alone do not determine a nation." The whole question was affected by theological considerations, and it was an interesting fact that the early Christian Church advocated celibacy. If the population of England and Wales doubled itself every sixty years, as it did during the last century, in a less period than separated us from the reign of Elizabeth there would be more people in this country than the whole world now contained. Emigration would not solve the problem. The only solution was to teach the feckless classes the wisdom which the more prudent classes had already learned.

PARIS

(From Our Regular Correspondent)

June 17, 1921.

A New Treatment for Syphilis

The daily press has made much ado about a new method for the treatment of syphilis. The subject may be thus summed up: Drs. Levaditi and Sazerac of the Pasteur Institute presented a communication to the Academy of Sciences concerning the use of a new substance in the treatment of syphilis; namely, potassium sodium bismuthate. This substance is still in its experimental stage. Intravenous injections of a watery solution of this compound were made in three syphilitic rabbits. The following day no spirochetes could be found in the blood. In a fourth rabbit given a subcutaneous injection of this salt, spirochetes disappeared in about four days. No recurrence was noted in these animals four months after treatment. The same results, namely, complete disappearance of spirochetes, were obtained in rabbits suffering from spontaneous infection, a natural occurrence in these animals and caused by spirilla. Levaditi and Sazerac have brought about a prompt cure of primary symptoms of syphilis in man, and have noted at the same time the disappearance of spirochetes from the blood. But no final conclusions, the authors state, can be drawn from these experiments, as several years must elapse before we can ascertain whether or not the treatment is adequate and whether or not recurrences may be anticipated.

The Future University City

I mentioned in a previous letter the project relative to the erection of the university city. The purpose of the movement is to procure for both French and foreign students of both sexes attending the University of Paris healthful boarding and rooming places, at moderate prices, under the best living conditions from a material, intellectual and moral standpoint. The 9 hectares needed for the project will be secured by dismantlement of old fortifications of the city. The following items will be at the expense of the University of Paris: (1) construction of buildings of the university city; (2) the landscape-gardening; (3) various installations in the park of the city for games and sports, and (4) upkeep of the city and its park. The public highways leading to the university city will be constructed and kept in repair by the city of Paris.

Dangers of Radium

At recent sessions of the Academy of Medicine, considerable attention was given to the dangers of radium. Dr. C. Regaud, director of the biologic laboratory and the therapeutic service of the Radium Institute of the University of Paris, presented an interesting communication on the subject, from which I take the following excerpts: The accidental absorption, by inhalation, of radium emanations is not dangerous except in a confined space. The rays of radioactive substances present for the skin and deep-seated organs (and especially for the hematopoietic system) dangers similar to

those connected with roentgen rays. Operators and attendants can protect themselves by forming the habit of: (1) taking judicious advantage of the law of distance (especially through the use of special tongs in performing manipulations), and (2) interposing between the operator's body and any source of radiation leaden screens several centimeters thick and impervious to penetrating rays. The few accidents that have happened up to the present time have been the result of ignorance of the danger and lack of precautions. Regaud believes that in a well organized establishment with an instructed and well trained personnel, the nurses and others near the patients under treatment will not run any risk through the action of radioactive bodies. Dr. Tuffier, professor at the school of medicine of the University of Paris, was anxious to obtain documentary information on the dangers of radium from the important American centers where radium has been in use for a long time and in large quantities, since there entire hospitals are devoted to the study of radioactive action. He has received replies from the Cancer Commission of Harvard University, the Howard A. Kelly Hospital in Baltimore and the Mayo Clinic. At the Mayo Clinic no menstruation troubles of any kind have been observed among the nurses handling radium applicators. There have been only accidents of a local nature, such as cutaneous lesions, not at all serious. To prevent accidents happening the personnel is changed very often. However, the Cancer Commission of Harvard University, and the Kelly Hospital gave him the following information: Soon after the study of radium therapy was begun, several cases of menstrual and general disturbances were noted among the nurses in charge of radium applicators. These disturbances occurred when the nurses were in contact with radium for two or three months in succession. They disappeared when the nurses left this service. Five cases have been noticed during recent months, and since that time a rotatory schedule has been established to prevent these accidents, so that now no nurse remains longer than two months in the service, and they are taught not to handle radium tubes without using tongs, and to keep them in a box specially constructed to prevent radiation. At Harvard University manifestations of azoospermia were also noted, but these disappeared after a few months when the operators were protected against radiation. At the Kelly Hospital, where the operators have had a great deal of experience in handling radium, a careful study has been made concerning accidents due to radiation. A reduction of polymorphonuclear elements and an increase of lymphocytes in the blood were noted, sometimes also a slight leukopenia. The disturbances that were noted at the beginning disappeared, thanks to precautions taken by the nurses. Time is the most important factor in the case, for since the nurses have been changed every month no disturbances have been noted either in menstruation or in the blood. The results of this inquiry show that accidents occurring through the handling of radium can be prevented by taking into account the duration of service and the factor of distance in the application of radium.

A Colony of Wards of the State

The department of the Seine is the guardian of more than 50,000 wards. Most of these children are entrusted to peasants and are brought up like the children of the family with which they live. They remain loyal to country life and to the home that adopted them. Pierre Godin has suggested that the department of the Seine might very properly send to northern Africa a certain proportion of these wards, since through their early training they are accustomed to agricultural work. It would help them by increasing their "life coefficient," and at the same time they would be useful to our colonies.

BUDAPEST

(From Our Regular Correspondent)

June 9, 1921.

Pellagra in the Southern Part of Transylvania and in Bukowina

Pellagra has existed in the southern part of Transylvania (now Roumania) and Bukowina for many years, and before the war a vigorous attempt was made by the Austro-Hungarian government to check the disease. When it was shown that pellagra might be caused by eating damaged maize, good flour was distributed by public officials, and means were taken to inform the population how to avoid the danger. In various districts the government established bakeries where bread could be obtained at a nominal cost, and a good result was obtained in diminishing both the prevalence and the severity of the disease. Successive bad harvests during the war and the consequent want of a sufficient number of agricultural laborers impoverished the people, particularly the mountain population in the Carpathians, and thereby neutralized to some extent the good work that has been done; while, on the other hand, the more careful examination of hitherto unsuspected districts has also caused an increase in the number of cases reported. In 1913 there were 387 cases reported in the affected counties of southern Hungary (Temes, Krasso, Hungary and Doboka), which have an area of about 10,000 square kilometers with a population of 60,000. The number steadily increased since 1919. The same conditions prevail also in Bukowina, now belonging to the Roumanian kingdom. The cases of pellagra in the hospitals of the respective territories are also more numerous than formerly. Luckily, the death rate of the disease is unimportant, one out of every hundred cases ending fatally. Even this is doubtful, as pellagra, being strictly a disease of undernourishment, it can be surmised that the lack of proper food caused other ailments too, promoting the fatal issue of the pellagra. The treatment consists, as mentioned before, in free distribution of maize, healthy food, administration of iron and quinin free of charge, and if necessary, surgical interference. Migrating commissions, consisting of physicians and teachers, travel in the affected districts and teach the people how to live hygienically and how to feed themselves properly.

Tuberculosis and Pregnancy

At the recent meeting of the Budapest Interhospital Association, Dr. Karsay gave an excellent summary of the views held at the present day on tuberculosis and pregnancy. He also related five cases which came under his observation. He states that pregnancy is a severe complication of tuberculosis, the severity of which increases with each pregnancy. Important among the prophylactic measures should be the prevention of conception among tuberculous women. If pregnancy has taken place, the woman should be kept under careful medical observation, and if the tuberculous disease grows worse, abortion should be strongly recommended. During the later months of pregnancy the induction of premature labor does not offer any advantages over labor at full term, and is fraught with seriousness for a tuberculous patient. Moreover, as a tuberculous mother may give birth to a healthy child with fair chances of good health later on, it would be unfair to sacrifice needlessly the life of an infant. He does not believe in universally interrupting the pregnancy, as advocated by Maragliano and Hamburger.

Koplik's Spots Not Constantly Present in Measles

Dr. Sontagh has looked for the spots on the buccal mucous membrane first described by Koplik as preceding by some days the general eruption of measles, and has found them in twenty-four cases. In one case they preceded the eruption by six hours, in eleven cases by one day, in five by two days,

in three by one and one-fourth days, and in two by four days. The spots were generally situated on the mucous membrane of the cheeks, opposite the molar teeth, but occasionally on the lips, beginning as slightly raised bluish white, circular, sharply defined points, and surrounded by a narrow red areola. In a few days they generally increase slightly and become more prominent, and the areola enlarges and becomes more irregular in outline. Their number varied between six and twenty, and the time during which they persisted, from two to six days. They were not marked just before or at the time of the general eruption. They were not present in fourteen cases (17.1 per cent.). Since they are never seen in other conditions accompanied by fever, they are of the greatest importance for the early diagnosis of measles. Sontagh claims that the buccal eruption in measles was first mentioned by Gerhardt and that their importance was recognized by Filatow in 1895, a year before their independent discovery by Koplik.

The Spread of Venereal Diseases

A census of venereal patients, be it made with ever so much care, is always incomplete, partly because of the great number of irregular practitioners or quacks who compete with medical men in treating venereal diseases. Owing also to the long duration of venereal diseases, those who are affected often lose patience and go from one medical man to another, with the result that the same patient appears in the statistics several times. In the military statistics, however, all these difficulties of the enumeration are avoided and trustworthy data are obtained. According to the military statistics, the prevalence of venereal diseases per thousand men in the Transylvanian army (eastern group of the Roumanian army) was 73.6 in 1919, and 61.0 in 1920. Thus, the incidence of syphilis is decreasing, owing to the fact that in 1920 (and since then continually) soldiers are examined once each week by venereal specialists, and if anything is found, they are sent to special hospitals where they are kept until they are radically cured. Those suffering from syphilis are called in every three months for a course of treatment through the first year, and afterward they are called in for a blood test every six months during the next two years. If in the meantime the soldier goes into civilian life, he is registered by the parish medical officer and has to present himself every six months at the nearest venereal hospital for testing his blood.

BELGIUM

(From Our Regular Correspondent)

Liége, June 16, 1921.

Results of the Antivenereal Campaign

Chief Inspector Rulot has just published the first statistical results on the antivenereal campaign in Belgium since the armistice. In some of our previous letters we have mentioned the organization of this campaign and have referred to official manifestations and private undertakings. In this connection the author has published a series of curves that is rather suggestive. It will be seen that a greater number of patients have been treated in private consultations, and there are good reasons why this is true. These consultations given by general practitioners are easier of access, and the opportunities are found everywhere throughout the country. It is here that the patient finds also the maximum of privacy and discretion, factors still very much appreciated. This attitude of mind may possibly change in the future, but for the present it still exists and must be taken into account if we are really desirous of combating effectively the progress of venereal diseases. The patient received here, as in various other organizations, absolutely gratuitous treatment, there being no physician's fees or charges for drugs. In large centers of population polyclinics were in favor, with an average of 212 clients. The reason lies near at hand. Here also patients find discretion observed. Then dispensaries follow with an average of 193, hospital consultation, 100, and finally university consultations, 47. In this last case the fear of the student is a factor. The general course of the curves for syphilis and gonorrhea is the same. An upward trend is noticeable until August, 1920, with syphilis showing a marked decrease from December, 1919, to January, 1920. The curves for men and women show the same fluctuations with identical intensity. The same is true for children, but the fluctuations are less pronounced. This progressive increase in the number of cases does not necessarily mean that the disease has spread. That may be the case, but the data are also capable of the interpretation that the lectures delivered by members of our society, the Société belge d'eugénique, by numerous practitioners and by government public health officers have also borne fruit by bringing to the physicians patients who would have otherwise remained ignorant of their condition and the existence of organized prophylaxis.

Appointment of Dr. Gengou

The city of Brussels has appointed Dr. Gengou general director of the Bureau of Public Health and Medicine. This office could not have been entrusted to more experienced hands, and the new incumbent is sure to render excellent service. Gengou is a professor in the Université libre of Brussels. He is also director of the Pasteur Institute of the province of Brabant, but he will resign this post, where he worked in close collaboration with Professor Bordet.

Psychologic and Anatomic Study of Senility

The Belgian Society of Neurology and Psychology held recently a special session to celebrate the twenty-fifth anniversary of its foundation. The psychologic and anatomic study of senility was the principal topic for discussion. Dr. Alexandre presented some interesting facts on the psychology of old age. A knowledge of the psychologic aspects of the normal state of the aged is of importance to legal medicine on more than one account. The relative ability of aged persons to make a will has been frequently discussed, and the question has been asked whether their testimony does not awaken *a priori* the same suspicion as that of a child. And when an old man has to answer for a crime, have we not the right to suppose that, on account of his age, there is a certain weakening of responsibility? These are questions which cannot be answered until we have been able to examine systematically a sufficient number of aged persons. Also for general medicine this study will be very interesting. Alexandre has reached the conclusion from his personal studies and from numerous articles in the literature that senile decadence of intellectual faculties is not portentous in its character. It is pathologic and due to the accumulation of infectious or toxic substances. It often occurs, however, that an old man through a series of experiences and an unconscious choice of habits reaches a state of egoism combined with euphoria and general indifference. From the anatomic standpoint Dr. Ley has shown the importance of changes in the endosecretory organs. The organ in which individual differences are most strongly marked is the thyroid. It does not seem, however, possible that changes found in these various organs can justify the theory that would explain old age as the consequence of changes in endosecretory organs. He also directed attention to the difficulty of connecting various lesions of nerve centers with phenomena occurring during life. It is evident that clinicians must continue to be dependent on pathologic anatomy, which alone can give the necessary precision for the delimitation of disease entities; but it seems that, up to the present time, the changes in the nervous system of normal aged persons have not been the object of

sufficient study. This is why authors who have described lesions falsely typical of senile dementia, have, in reality, described the ordinary lesions of normal senility.

Reforms in Belgian Penitentiary System

Important reforms in Belgium's penitentiary system are in course of realization. For some time past certain scientists have declared that abnormal prisoners, of whom there are great numbers in prisons (a minimum of 25 per cent., according to Dr. Vervaeck) are entitled to special treatment. Among the abnormal delinquents and the irresponsible insane patients who are interned in asylums, there is a large number of persons for whom no adequate special provision has been made. Among this number are found the constitutionally feebleminded and degenerate; also many neuropaths and drug addicts. As a result of the labors of Drs. Heger-Gilbert and Vervaeck, an anthropologic service has just been established in prisons, under the direction of Dr. Vervaeck. Anthropologic laboratories have been installed in all the large prisons, with a psychiatric annex in which delinquents can be examined, observed and, when necessary, treated. Thus the classification of delinquents and the study of their condition from a professional standpoint will be made possible. The contamination of the good elements that are still susceptible of improvement will be prevented. Among these abnormal prisoners there are some who should be confined neither in a prison nor in a hospital for the insane; for example, the criminal insane, kleptomaniacs, those with perverted instincts and abnormal sexual impulses. Some of these ugly customers who cannot or will not submit to social restraint constitute, on account of their vices, a very grave danger to society. The asylum-colony of Reckheim has been created to take care of some representatives of this class.

BERLIN

(From Our Regular Correspondent)

June 4, 1921.

Delimitation of General, Local and Lumbar Anesthesia

At the recent Berlin meeting of the German Surgical Society, Professor Braun of Zwickau and Professor Denk of Vienna discussed the problem of the delimitation of general, local and lumbar anesthesia. According to Braun, lumbar anesthesia causes a higher mortality rate than general narcosis and should, therefore, be restricted to definite indications. The secondary effects of anesthesia depend on the kind of anesthetic used. In lumbar anesthesia the injections must not be made too high up. Elevation of the pelvis should be avoided. Its principal field of application is in amputations on the aged; more particularly in arteriosclerosis and dislocations of the hip, and in fact in operations on the lower extremities and on the abdominal organs below the umbilicus. In the hospital services it is indicated in about 1 per cent. of all cases. In epidural sacral anesthesia the element of danger is equally as great as in lumbar anesthesia. Resorption from the epidural space is very great. It should not be overlooked that the maximal dose of procain; namely, from 0.4 to 0.5 gm., should be reduced in dealing with weakened patients. Sacral anesthesia is only to be considered when it is desirable to block the sacral plexus, for which purpose local anesthesia is sometimes to be preferred. Its range of indications is therefore somewhat limited. Intravenous anesthesia has not found many advocates as yet. Local anesthesia by means of procain with the addition of epinephrin is entirely harmless, but even here the natural limitations must not be exceeded. Braun himself employs local anesthesia in about 50 per cent. of all operations. Under certain circumstances the peculiar psyche of the patient may constitute a contraindication. It will never be possible to dispense with general narcosis entirely, and it should be used from time to time if for no other reason than to demonstrate it to the oncoming generation of physicians. The principal field of local anesthesia is minor surgery of the extremities. Even in insignificant interventions general narcosis sets up rival claims on our attention. Of the more extensive interventions, operations on the skull are mainly to be considered. However, anesthesia of the dura is impossible to accomplish. For opening up the skull, general anesthesia is to be recommended. Local anesthesia may be employed for operations on the neck, also for strumectomy. In exophthalmic goiter, general narcosis is more appropriate on account of the excitable condition of the patient. Local anesthesia applied to the cervical plexus is not devoid of danger. For operations on the thoracic wall, local anesthesia may be employed; but for thoracoplasty, general narcosis is better. In major abdominal operations he recommends that first a scopolamin-morphin solution be injected, after which the abdomen may be opened under local anesthesia, and then during the remainder of the operation general anesthesia may be resorted to from time to time, as necessary. Postoperative lung affections and embolisms cannot be prevented by local anesthesia. Anesthesia of the splanchnic nerve by the Kappis method has resulted fatally in some cases. Its application after opening the abdominal cavity, after the manner proposed by Braun has proved its value but is not yet sufficiently developed for general use. For blocking the sacral plexus in prostatectomy and cancer of the rectum, lumbar, sacral and parasacral anesthesia are rival claimants for favor; in his last 400 cases he had only eighteen failures. In operations on the upper extremities, anesthesia of the brachial plexus by the Kulenkampff method has a claim on our attention. To be sure, there is a danger of pleural injury in this form of anesthesia, but with correct technic it can be avoided. Among other uses, it makes possible the reduction of fractures by means of the fluoroscope. For operations on the lower extremities, lumbar anesthesia frequently asserts successfully its rights. Many as are the excellent features of local anesthesia, it has its limitations, which must be observed.

In taking up the subject, Professor Denk remarked that during recent years great changes had been brought about in general anesthesia, through which the element of danger has been much reduced. In almost all circles, ether is coming to be regarded as the best general anesthetic. It is being used by the drop method with an open mask. Primary death from heart failure does not occur with this method of narcosis. Intermittent narcosis should be avoided. The injection of a narcotic before the anesthesia has proved to have a certain value, as it betokens a saving of 35 per cent. in chloroform and 40 per cent. in ether narcosis. To prevent lung complications after anesthesia, patients should be encouraged to breathe deeply (expectorants, oxygen). Chloroform is contraindicated in affections of the liver and in disturbances in the portal circulation. By some surgeons the Billroth mixture is preferred. Diminution (*Verkleinerung*) of the circulation by the Klapp method has proved efficacious and saves large quantities of whatever anesthetic is employed. Ethyl chlorid anesthesia has proved its value, but in larger doses ethyl chlorid constitutes a poison and is not adapted for narcosis. Lumbar anesthesia occupies a midway position between local and general narcosis. The form of anesthesia to be employed depends on the exigency of the case. We should not attempt to establish any general rules but should leave the decision to individual judgment. Aside from cases in which a contraindication obtains, owing to some disease or affection of the patient, the wishes of the patient may be the decisive factor, as in hernia operations. It is better if the various methods are regarded not so much as rival claimants as they are as supplements of each other.

Marriages

FREDERICK H. STIRES, Hoydenville, Ohio, to Miss Anne Pauline Warfield, Somerton, Ohio, June 14.

FRANCIS MARION STARR BOWERS to Miss Mary Catherine Keen, both of Wilkinsburg, Pa., June 21.

WILLIAM EZARD BUCKLEY, Redgranite, Wis., to Miss Etta Costello of Fond du Lac, Wis., June 25.

JOSEPH NEWTON SISK, Fort Worth, Texas, to Miss Elizabeth M. Reed of Dallas, Texas, July 3.

JAMES EDWARD FURR, Marks, Miss., to Miss Jessie May Chrestman of Lyon, Miss., in July.

FRANCIS BRIAN GRYCZKA, Reading, Pa., to Miss Rose Summa of Kingston, Pa., June 30.

JULIUS A. JOHNSON, Bottineau, N. D., to Miss Ruth Collins of Barnesville, Minn., in June.

RODERICK F. MCHUGH, Aitkin, Minn., to Mrs. Victoria L. Taylor of St. Paul, in June.

J. SAMUEL CONNOR to Miss Elva Catherine Negley, both of Waynesboro, Pa., July 1.

FRED CRENSHAW, Fairfield, Ala., to Miss Alberta Thomas of Macon, Ga., June 11.

PHILLIP RAPHAEL LEHRMAN to Miss Wanda Scheps, both of New York, June 28.

GEORGE HERRMANN, St. Louis, to Miss Anna Williams of Vandalia, Ill., June 30.

NATHANIEL BAINBRIDGE LIEF to Miss Mildred Glass, both of New York, June 29.

PAUL A. O'LEARY to Miss Ruth Youmans, both of Rochester, Minn., in June.

EDGAR EVERETT POOS, Okawville, Ill., to Miss Helen Duzeski of Chicago, July 2.

MYRON I. INGRAM to Miss Cecile Friedman, both of Chicago, June 15.

HAROLD SCHWARTZ to Miss Lulu Nimmo, both of Butte, Mont., in June.

The notice of the marriage of FOREST BERTRAM AMES to Miss Mildred Mabel, published last week, should read Miss Mildred Mabel Wilder.

Deaths

Norman H. Morrison, Los Angeles; Kansas City (Mo.) Medical College, 1880; member of Medical Society of the State of California; chief surgeon of the Santa Fe Railway system; formerly chief surgeon of the California Railroad Company; builder of the Los Angeles Hospital; died, July 3, following an operation at the Santa Fe Coast Lines Hospital, Los Angeles, of which he was founder, aged 68.

Henry A. Connolly, Kingston, Ont.; Queens University, Kingston, Ont., 1908; died, June 26, from cerebral hemorrhage, at Ottawa, Ill., while on a visit from Warracknabeal, Australia, where he had made his home for the last twelve years, aged 49.

Ezra B. Potter, Rochester, N. Y.; University of Pennsylvania, Philadelphia, 1872; for thirty-eight years assistant superintendent at the Rochester State Hospital; member of the Medical Society of the State of New York; died, June 24, aged 73.

William W. Stuart, Clarksdale, Miss.; Eclectic Medical Institute, Cincinnati, 1858; served in medical department, Confederate army; member of the Mississippi State Medical Association; died, June 29, from general debility, aged 86.

John H. Moon, Cooperstown, N. Y.; Albany Medical College, Albany, N. Y., 1872; member of the Medical Society of the State of New York; died, June 28, in the Thanksgiving Hospital, of uremia, following an operation, aged 72.

James R. Carroll, Henderson, Tenn.; Kentucky School of Medicine, Louisville, 1876; Vanderbilt University, Nashville, 1881; member of the Tennessee State Medical Association; county health officer; died, June 29, aged 69.

LeRoy Rogers, Huntingdon, Ind.; Eclectic Institute, Cincinnati, 1880; veteran of the Civil War; died, June 13, at the National Soldier's Home, Danville, Ill., from acute cardiac dilatation, mitral insufficiency, aged 76.

James S. Washington, Somerville, Tenn.; Jefferson Medical College, Philadelphia, 1861; Confederate veteran; practitioner in Somerville for more than half a century; died, June 29, after an illness of two weeks, aged 83.

Joel M. Ingersoll ⊕ Rochester, N. Y.; Bellevue Hospital Medical College, New York, 1879; specialized in otology, laryngology and rhinology; died, July 3, at Brigham Hall, Canandaigua, N. Y., aged 64.

Dwight Dudley, Endicott, N. Y.; Medical Department of Columbia College, New York, 1864; Civil War veteran; for twenty years on the U. S. Pension Board; died, May 19, from chronic nephritis, aged 79.

John T. Seale, Neches, Texas; University of Alabama, Tuscaloosa, Ala., 1897; member of the Medical Association of the State of Alabama; died, June 26, after an illness of two months, aged 59.

John Turner Roberts, Kountze, Texas; Southern Methodist University, Dallas, Texas, 1911; died, June 27, at Beaumont, Texas, from a complication of diseases, following an operation, aged 33.

Alice Burritt, Washington, D. C.; New York Medical College and Hospital for Women, Homeopathic, New York, 1879; died, July 6, at the Homeopathic Hospital, Washington, aged 67.

Andrew Jackson Smith, Garner, N. C.; Vanderbilt University, Nashville, Tenn., 1912; died, June 22, in a hotel at Winston-Salem, N. C., from an overdose of morphin, aged 41.

James Lonsdale, Sauk Rapids, Minn.; Rush Medical College, 1879; Civil War veteran; died, June 29, at St. Raphael's Hospital, St. Cloud, Minn., from heat prostration, aged 74.

Abraham Suter Metzler, Coshocton, Ohio; Charity Hospital Medical College, Cleveland, 1868; veteran of the Civil War; died, May 14, following a long illness, aged 81.

Harry Vaughan ⊕ Morristown, N. J.; College of Physicians and Surgeons, Baltimore, 1895; assistant to staff, All Souls Hospital, Morristown; died, June 22, aged 46.

Daniel Webster Rumbaugh, Willard, Ohio; University of Wooster, Cleveland, 1873; died, May 11, from a complication of diseases, in Sandusky Hospital, aged 75.

William J. Moore ⊕ Adams, Minn.; Bennett Medical College, 1893; died in St. Mary's Hospital, Minneapolis, from chronic nephritis, June 21, aged 50.

Eli S. Warlick, Morgantown, N. C.; University of Tennessee, Memphis, 1881; member of the Tennessee State Medical Association; died, July 4, aged 67.

John William Norris, Oregon City, Ore.; Rush Medical College, Chicago, 1872; Civil War veteran; died, June 30, after a lingering illness, aged 77.

John C. Johnston, La Grange, Tenn., College of Physicians and Surgeons, Memphis, 1908; died, May 12, after an illness of two weeks, aged 51.

George Porter, Orlando, Fla.; New York Homeopathic Medical College and Hospital, 1880; died, April 29, from heart disease, aged 65.

Thomas T. Earle, Greenville, S. C.; George Washington University, Washington, D. C., 1870; Civil War veteran; died, June 30, aged 76.

William Rohder, Valier, Ill.; National University of Arts and Sciences, St. Louis, 1912; died, June 24, from heart disease, aged 46.

Howard C. Fickes ⊕ Owen, Wis.; Jefferson Medical College, Philadelphia, 1886; died in June, at Chippewa Falls, Wis., aged 68.

Henry North Graves, Dallas, Texas; University of Nashville, 1868; served in the Confederate army; died, June 28, aged 75.

Austin B. Fuller, New Haven, Conn.; Yale Medical School, New Haven, 1892; formerly a dentist; died, June 26, aged 83.

Agnes V. Swetland, Omaha; State University of Iowa College of Medicine, Iowa City, 1891; died, April 16, aged 74.

Benjamin Frankson, Upham, N. D.; Milwaukee Medical College, Philadelphia, 1874; died in June, aged 54.

Orella S. Martin, Salamanca, N. Y.; Homeopathic Hospital College, Cleveland, 1870; died, June 15, aged 60.

Marion Koogler, Marion, Ohio; Jefferson Medical College, Philadelphia, 1874; died in June, aged 73.

Charles W. Hall, Tacoma, Wash.; Rush Medical College, Chicago, 1887; died in June, aged 58.

⊕ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Manhood Pills, Phoenix Chill Cure, Spanish No-Kink and Phoenix Skin Success Ointment.—In February and December, 1919, Lewis A. Fitzpatrick, Sr., and Lewis A. Fitzpatrick, Jr., trading as the Fitzpatrick Co., Helena, Ark., shipped a quantity of the nostrums just listed.

The "Manhood Pills," which were labeled "Phoenix Mfg. Co., Helena, Ark.," were found to contain very small quantities of strychnin (possibly with nux vomica), zinc (probably as phosphid) and cantharides ("Spanish fly") together with plant extractives from damiana. The pills were falsely and fraudulently represented as effective to restore lost manhood and bring strong, healthy sexual power.

The "Phoenix Tasteless Chill Cure," alleged to be "Prepared by Phoenix Mfg. Co., Helena, Ark.," was found by the federal chemists to be a syrup prepared from glucose containing quinin, sulphuric acid and plant extractives from senna and possibly licorice, together with a small amount of alcohol. It was falsely and fraudulently represented as a preventive, treatment, remedy and cure for chills and fever, ague and all malarial disorders and for driving out "all the poison that is in the body."

The "Spanish No-Kink or Hair Straightener" was declared by the federal chemists to be a mineral jelly scented with citronella. It was falsely and fraudulently represented as a preventive, treatment, remedy and cure for head itch, tetter and all scalp troubles, to remove dandruff and the cause of dandruff and—more wonderful still—"to cause five hairs to grow in place of one."

The "Phoenix Skin Success Ointment" which was labeled as containing 10 per cent. mercuric oxid was reported by the federal chemists to consist of mineral wax, talc, and carbonate of lime, scented with citronella and containing no mercury compounds. It was falsely and fraudulently represented as a cure for eczema and all other itching skin troubles and eruptions, all parasitic skin diseases, running sores and scalp troubles, etc.

In October, 1920, the two Fitzpatricks pleaded guilty and were fined $120 and costs.—[*Notice of Judgment No. 8796; issued May 13, 1921.*]

Arthur's Sextone Tablets.—A quantity of this preparation alleged to have been shipped by the Palestine Drug Co. of St. Louis, in January, 1920, was declared misbranded. The Bureau of Chemistry reported that analysis showed the pills to be composed essentially of iron and zinc salts, caffein and unidentified plant extractives and traces of phosphates. The package contained such claims as:

"Designed to Correct . . . the Evil Results Following Sexual or Alcoholic Excesses, Overwork, Worry, Etc. . . ."
"Sextone Tablets for either sex Composed of . . . the Most Potent and Dependable Aphrodisiac Agencies. . . ."
"Stimulate the Sexual Plexus . . . nourish the nervous system and build it up. . . ."

These claims were declared false and fraudulent in that the product "did not contain any ingredient or combination of ingredients capable of producing the effects claimed." In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8839; issued May 20, 1921.*]

Palmo Tablets.—The McCullough Drug Co., Lawrenceburg, Ind., are alleged to have shipped in May, 1920, a quantity of this product which was declared misbranded. The Bureau of Chemistry reported that the tablets consisted essentially of plant extractives, including damiana and nux vomica, iron phosphate and a small amount of phosphorus. They were falsely and fraudulently recommended for nervous exhaustion, depression or despondency, irritability and for "excesses of the usual kind" and were declared to "re-animate and re-vitalize." In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8809; issued May 20, 1921.*]

Savatan.—In May, 1920, the S. Pfeiffer Mfg. Co. of St. Louis is alleged to have shipped a quantity of this preparation which the federal authorities declared misbranded. Analysis by the federal chemists showed the product to consist of capsules containing, essentially, oils of tansy and mint and green apiol. The product was labeled in part:

"The Effectual Emmenagogue . . ."
"To Prevent Irregularities Take one Savatan three (3) times a day for four or five days before the expected appearance of the menstrual period."

These and similar claims appearing on the package were declared false and fraudulent and, in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8805; issued May 20, 1921.*]

Parto-Glory.—In June, 1920, the Partola Service Corporation, New York, consigned a quantity of this preparation which the federal officials held was misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed it

to consist of a solution containing essentially an iron salt, strychnin, quinin and potassium bromid. The trade package contained such claims as:

"For every form of nervous affliction . . . used with remarkable success whenever nerves have been affected . . ."
"The great Upbuilder of the Nervous System."
"Great Wonderful Nerve Tonic."
". . . a genuine, powerful nerve tonic that builds up from the bottom.
"Parto-Glory is a friend in need for men and women who have indulged too freely in the excesses and frivolities of life, and who are alarmed by the evident decline of capacity, ability, and even desire to take part in the joys of healthy, vigorous, ambitious manhood and womanhood."
"Parto-Glory is what the drinker needs to steady his nerves, clear his mind, brace him up, give him a hold on himself."

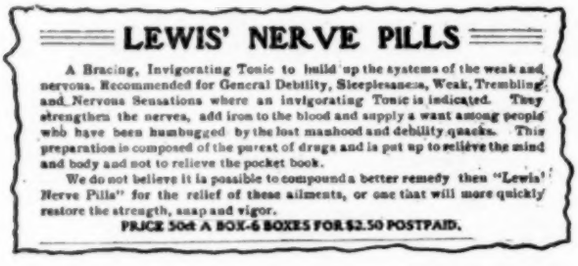
These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8884; issued May 18, 1921.*]

Damiana Compound with Saw Palmetto.—The Hollander-Koshland Co., Baltimore, Md., were alleged to have shipped in June, 1920, a quantity of Damiana Compound with Saw Palmetto which was misbranded. The federal chemists reported that analysis of the article showed it to be a solution containing damiana extractives, an iron (ferric) salt and nux vomica alkaloids. It was falsely and fraudulently represented to be effective as a remedy, cure, and preventive of sexual weakness, loss of manhood, debility, lack of virility and impotency, psychic impotency, spermatorrhea, etc. In October, 1920, the court ordered that the cartons in which the product came should be destroyed and the labels removed from the

bottles and the product be sold by the United States marshal, provided, however, that, if the sale could not be effected in such a way as to realize a substantial amount, it should be destroyed.—[*Notice of Judgment No. 8887; issued May 18, 1921.*]

Bick's Sextone Pills.—The Palestine Drug Company of St. Louis are alleged to have shipped in January, 1920, a quantity of this product which the federal authorities declared misbranded. The Bureau of Chemistry reported that the preparation consisted of two pills, chocolate-colored and orange-colored, respectively. The former consisted essentially of calcium carbonate, iron oxid, a small amount of plant extractives and sugar. The latter consisted essentially of finely divided metallic iron, nux vomica alkaloids and calcium carbonate. They were falsely and fraudulently labeled as aphrodisiacs. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8827; issued May 20 1921.*]

Lewis' Nerve Pills.—The A. H. Lewis Medicine Co., St. Louis, Mo., shipped a quantity of these pills in May, 1919, which the federal authorities charged were misbranded. The Bureau of Chemistry reported that analysis showed the pills


LEWIS' NERVE PILLS

A Bracing, Invigorating Tonic to build up the systems of the weak and nervous. Recommended for General Debility, Sleeplessness, Weak, Trembling and Nervous Sensations where an invigorating Tonic is indicated. They strengthen the nerves, add iron to the blood and supply a want among people who have been humbugged by the lost manhood and debility quacks. This preparation is composed of the purest of drugs and is put up to relieve the mind and body and not to relieve the pocket book.

We do not believe it is possible to compound a better remedy than "Lewis' Nerve Pills" for the relief of these ailments, or one that will more quickly restore the strength, snap and vigor.

PRICE 50ct A BOX-6 BOXES FOR $2.50 POSTPAID.

to consist essentially of an iron salt, strychnin, phosphorus and unidentified plant extractives. The trade package recommended these pills for "Nervousness, General Debility, Lack of Energy, Self Distrust, Loss of Memory and Diseases arising from Mental Worry, Overwork, Excesses, etc." These claims were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8958; issued May 24, 1921.*]

Bick's Daisy 99.—A quantity of this preparation alleged to have been shipped by the Palestine Drug Co., of St. Louis, was declared misbranded. The federal chemists reported that analysis showed it to consist essentially of a solution of sodium acetate and buchu in alcohol and water. The presence of extractives of cascara was also indicated. It was falsely and fraudulently recommended for the treatment of gonorrhea, leucorrhea, etc. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No 8828; issued May 20, 1921.*]

Planten's Capsules.—In December, 1919, G. J. Fajardo of New York City is alleged to have shipped to San Juan, P. R., a quantity of Planten's Capsules which were misbranded. The federal chemists reported that the contents of the capsules consisted of balsam of copaiba. The preparation was fraudulently represented as a cure for chronic and acute gonorrhea, gleet, cystitis and all forms of urethritis. In August, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8833; issued May 20, 1921.*]

San Methyl.—Several packages of this preparation consigned in July, 1919, by the Grape Capsule Co., Allentown, Pa., were declared misbranded. Analysis of a sample by the Bureau of Chemistry showed it to consist essentially of copaiba, cubebs, oils of santal and cinnamon, methylene blue and phenyl salicylate. It was represented as an excellent cure for gonorrhea, gonorrheal rheumatism, gleet and urethral diseases generally. These claims were declared false and fraudulent. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8725; issued April 27, 1921.*]

Pendleton's Vegetable Panacea.—A quantity of this product, alleged to have been shipped by the G. I. Robinson Drug Co., Thomaston, Maine, in March, 1920, was declared misbranded. The Bureau of Chemistry reported that analysis showed the preparation to consist essentially of an alcoholic solution of red pepper, camphor, myrrh and oils of spearmint, thyme, cedar and cloves. It was falsely and fraudulently represented as a cure for rheumatism, headaches, palpitation of the heart, diphtheria, sore throat, etc. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8717; issued April 27, 1921.*]

Vagiseptic Discs.—This preparation alleged to have been shipped in January, 1920, by the Palestine Drug Co. of St. Louis was declared misbranded. Analysis by the federal chemists showed the "disc" to consist essentially of sodium chlorid (table salt) a small amount of alum, sugar, starch and talc. It was falsely and fraudulently represented as a remedy for gonorrhea and for "Amenorrhea and other Uterine and Vaginal Disorders. . . ." In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8829; issued May 20, 1921.*]

Arthur's Emmenagogue Pills and Leslie's Emmenagogue Pills.—The Palestine Drug Co., of St. Louis, Mo., are alleged to have shipped in January, 1920, a quantity of Arthur's Emmenagogue Pills and Leslie's Emmenagogue Pills. These preparations were declared misbranded. Analyses of samples of the articles by the Bureau of Chemistry showed that both brands of pills consisted essentially of iron (ferrous) sulphate, aloes, and an unidentified alkaloid. They were both sold under the false and fraudulent claim that they were emmenagogues. In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8908; issued May 23, 1921.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SALIVARY AND SERUMAL CALCULUS

To the Editor:—Please give the most recent theory as to the cause of the formation of tartar on the teeth and preventive measures.

ROBERT WATT, M.D., Philadelphia.

ANSWER.—Black, in his "Special Dental Pathology," gives the results of studies on salivary calculus (tartar) by himself and also by Burchard. After an extensive study of the subject, Black was able to prove, by a certain ingenious method for the collection of deposits on teeth, that the quantity of food taken governed the amount of the deposits. If one ate sparingly, no deposit was found; if one ate freely, much deposit was observed. The kind of food ingested made no perceptible difference in the quantity of the deposit.

Salivary calculus is always soft when first deposited; later it becomes hard. Since the deposits are soft at first, thorough brushing of all parts of the teeth will remove the soft deposit before it hardens. The other method, restricting the diet, prevents the deposition. A combination of the two is the ideal preventive measure.

Serumal calculus is different from salivary calculus. The latter is a combination of certain constituents of the saliva, micro-organisms and food débris. This is grayish, and forms on the teeth down to, but not below, the gum margins, while the serumal calculus is black and is deposited only on the roots of the teeth below the gum margins. The cause for the serumal deposit is unknown, but it is probably some local irritation. Both contain lime, but the serumal deposit is much harder. It is often associated with pyorrhea alveolaris.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
FLORIDA: Jacksonville, Aug. 1. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan Concord.

District of Columbia April Examination

Dr. Edgar P. Copeland, secretary, Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, April 12-14, 1921. The examination covered 16 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 6 passed and 5 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University Medical School (1920) 80.1, (1921) 82.3	(1908)	88.8,
Howard University	(1920)	77
Cornell University Medical College	(1917)	88.5
University of Pennsylvania	(1919)	90.8
FAILED		
College of Physicians and Surgeons, Boston	(1916)	62.2
Kansas City College of Medicine and Surgery	(1920)	32.7
St. Louis College of Physicians and Surgeons	(1920)	26.1
Hahnemann Med. Coll. & Hosp. of Philadelphia	(1918)	70.1
Temple University Department of Medicine	(1919)	62.1

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Howard University	(1890)	Ohio
University of Vermont College of Medicine	(1896)	Vermont
Medical College of Virginia	(1913)	Virginia

Kentucky May Examination

Dr. A. T. McCormack, secretary, Kentucky State Board of Health, reports the written examination held at Louisville, May 10, 1921. The examination covered 11 subjects and included 110 questions. An average of 70 per cent. was required to pass. Of the 50 candidates examined, 49 passed and 1 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Phys. and Surgs., San Francisco	(1921)	85
University of Louisville Medical Dept. (1920) 79, (1921) 79, 81, 81, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 88, 89, 89, 89, 93, 94		
Eclectic Medical College	(1921)	77
Ohio State University College of Homeo. Med.	(1921)	82
Vanderbilt University Medical Department	(1920)	87
FAILED		
Loyola University	(1917)*	72

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Hospital College of Medicine, Medical Department, Central University of Kentucky	(1903)	Texas
Johns Hopkins University Medical Department	(1913)	Maryland
Boston University School of Medicine	(1905)	Mass.

* Fell below 60 per cent. in more than one branch.

Oregon January Examination

Dr. Urling C. Coe, secretary, Oregon State Board of Examiners, reports the written examination held at Portland, Jan. 4-6, 1921. The examination covered 13 subjects and included 92 questions. An average of 75 per cent. was required to pass. Of the 20 candidates who took the physician's and surgeon's examination, 15 passed, including 1 osteopath, and 5 failed. Of the candidates who took the osteopathic examination, 5 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Leland Stanford Junior University School of Medicine (1921) 85	(1917)	88.9
Chicago College of Medicine and Surgery	(1909)	81
Indiana Medical College School of Medicine of Purdue University	(1906)	82
State University of Iowa College of Medicine	(1897)	80.1
University of Louisville	(1916)	75
Long Island College Hospital	(1899)	80.9
Eclectic Medical Institute, Cincinnati	(1891)	71.4
University of Oregon (1918) 81.1, (1919)		82.2
Temple University Department of Medicine	(1920)	78.9
University of Toronto Faculty of Medicine	(1907)	82.1
Western University Faculty of Medicine	(1906)	83.4
University of Naples	(1897)*	79.4
Osteopaths	75, 75, 75, 76.5, 77.1, 80	
FAILED		
Curtis Physio-Medical Institute	(1893)*	28.6
Homeopathic Medical College of Missouri	(1900)	63.7
Southwest School of Medicine and Hospital	(1916)	56.1
Columbia University College of Phys. and Surgs.	(1908)	73.2
Gate City Medical College	(1908)*	52.3
Osteopath	†	

* Graduation not verified.
† No grade given.

Rhode Island January Examination

Dr. Byron U. Richards, secretary, Rhode Island State Board of Health, reports the written and practical examination held at Providence, Jan. 6-7, 1921. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Eastern University of Medicine	(1913)	80.8
Harvard University (1900) 92.8,	(1918)	87.3
Jefferson Medical College of Philadelphia	(1917)	87.4
Medical School of American University of Beirut	(1913)*	86.3
FAILED		
Laval University Faculty of Medicine	(1919)	76.9

* Graduation not verified.

Book Notices

GROWTH OF THE SOIL. Translated from the Norwegian of Knut Hamsun by W. W. Worster. Two volumes. Cloth. Price, $5. New York: Alfred A. Knopf, 1921.

Knut Hamsum, winer of the Nobel prize for literature in 1920, is the author of numerous novels, dramas, essays and poems depicting Norwegian life. In "Growth of the Soil" he presents an epic, the chief plea of which is the call to go back to the land and the simple life. The story concerns a simple peasant who goes into the wilds, builds himself a farm, marries, raises his family, and through his success attracts to the uncultivated forests more and more people until he establishes a farming community. Incidental to the story there are many medical aspects, for Hamsun is a realist and knows that few human lives are untouched by the problems of medicine. Thus Inger, wife of Isak, chief character of the story, is afflicted with a harelip. The great fear of her life is that one of her children will be similarly afflicted. At the coming of each child she sends her husband away and delivers herself so that she alone may know the appearance of the infant. Before the coming of the third child, the house is visited by a wandering Lapp, who carries with him in a sack a hare poached from the neighboring forest. Inger's superstitious fear of a prenatal impression is brilliantly depicted. Unfortunately, the child born is a female infant, likewise afflicted with a harelip. Inger commits infanticide and buries the infant. The story details her subsequent arrest and considers the Norwegian law which condemns her to a long prison sentence. Again a social side of the question is touched, since her life in prison is the determining factor in her future. In prison she comes in contact with modern medical science. The harelip is cured by a plastic operation. She also receives instruction in reading, writing and many household arts which make her a better partner in the building of the family when she returns.

The author also shows how city residence gives an outlook on life which causes the city dweller to look down on the simple peasant. As the community grows and new persons come in, life becomes more complex. An insight is afforded into the jealousies and difficulties of intimate country life. Another woman, familiar with city life, returns to the country and takes up an occupation with one of the farmers in the neighborhood. She, too, commits infanticide. In her

case, however, a number of persons become interested. When the case is tried the wife of the district superintendent makes a brilliant address which results in her acquittal. It is in this address that the author preaches his views regarding the attitude of society to the unmarried mother. The address is dramatic and one of the strongest pleas for equal responsibility of the father that one can find in modern literature.

Novels of the type of the "Growth of the Soil" are as instructive as many nonfictional works, and have the added advantage of intense interest.

THE ANATOMY OF THE NERVOUS SYSTEM FROM THE STANDPOINT OF DEVELOPMENT AND FUNCTION. By Stephen Walter Ranson, M.D., Ph.D., Professor of Anatomy in Northwestern University Medical School, Chicago. Cloth. Price, $6.50. Pp. 395, with 260 illustrations. Philadelphia: W. B. Saunders Company, 1920.

In this volume, Ranson presents the anatomy of the nervous system from the dynamic rather than the static point of view. Recognizing the difficulty of teaching by structural details alone, he points out their functional significance as well; in doing this he lays the foundation for physiologic and clinical neurology. The descriptions are comprehensive, accurate, easily understood and not burdensome. The subject matter includes the recent, important contributions to the science of neurology. Where disputed points occur, the author's name and date of his contribution appear; a full list of these references and the literature is included in a bibliography. Among recent contributions to neurology with which the neurologist is familiar may be mentioned the work of Ingvar on the cerebellum. The spinal paths for sensation are clearly described and clinical research on this subject is utilized. The extrapyramidal motor system is described and its relation to clinical neurology noted. The original illustrations of dissections assist in no small way in making the subject interesting and lucid. Special note may be made of the internal configuration of the cerebral hemispheres. Considerable original work is referred to in the sympathetic nervous system. The laboratory outline of neuro-anatomy is practical. The index is complete and lends itself readily to efficient guidance. The volume is an excellent textbook and a good reference handbook.

LEHRBUCH UND ATLAS DER AUGENHEILKUNDE. Bearbeitet von Prof. A. Elschnig, Prof. R. Greeff, Prof. L. Heine, Prof. E. Hertel, Prof. E. v. Hippel, Prof. E. Krückmann, Prof. J. Oeller, Prof. A. Peters and W. Stock. Herausgegeben von Dr. Theodor Axenfeld, Professor der Augenheilkunde in Freiberg. Sixth edition. Cloth. Price, 78 marks. Pp. 840, with 650 illustrations. Jena: Gustav Fischer, 1920.

Evidently the quality of glue used in the German binderies is sadly below that of former years, judging from the rapidity with which this textbook fell to pieces. But this defect is more than made up for by the good printing and evidences of careful proof-reading throughout (only two errors were noted), and completely overshadowed by the excellence of the illustrations. The latter far surpass the standards set by the higher class textbooks, although, in a few instances, the plates are not sufficiently illustrative of the matter in hand. The photomicrographs are uniformly good, and the fundus illustrations by Oeller live up to the reputation he established some years ago. Many of the newer phases of ophthalmology are considered at length and fully discussed, even though they have not been universally accepted. For example, parenteral injections of milk are still considered by Axenfeld as being on an experimental plane. The slit lamp of Gullstrand is described, but the enthusiasm of the workers with that instrument is not reflected among these pages. But in every chapter, the most modern accepted concepts of diseases of the eye and the treatment are dealt with in a comprehensive manner. The American ophthalmologist will disagree with the views in several phases which, in this country, are considered of major importance. The art of retinoscopy is dealt with in a very stepmotherly manner by Axenfeld, and refraction as a whole does not receive the consideration that our own textbooks give it. Again, the etiology of ocular disease of other than local origin is not given the attention that American ophthalmologists are wont to employ. There are several chapters that stand out supreme. That on the conjunctiva, by Axenfeld, is a masterpiece, and every sentence deserves careful study. He stresses the falsity of the older conception of pinguecula and emphasizes the fact that it is not composed of fat, but is a localized hypertrophy (even to hyaline thickening) and is due to irritation through the palpebral aperture. The chapter on the cornea, by Elschnig, is equally good and contains lucid descriptions of corneal conditions. Greef contributes the chapters on the retina, and the optic nerve and visual tract. These are very well written and complete, and the etiologic phase of diseases of these structures is elaborated on far better than in other chapters. The chapter on injuries, both civilian and war, by Hertel, contains a short, but excellent treatise on sympathic ophthalmia, and is concluded by a short discussion of the question of compensation for ocular injury. Heine closes the text with a compilation of the possible ocular complications of systemic disease. Taken by and large, this may be considered as one of the best textbooks of ophthalmology that has appeared. To the student, it presents a lucid picture of ocular disease; to the general practitioner, it lends a diagnostic and therapeutic hand in puzzling conditions; and to the ophthalmologist it offers an excellent modern concept of ocular disease, one that will bear rereading.

ELEMENTS OF HYGIENE AND PUBLIC HEALTH FOR THE USE OF MEDICAL STUDENTS AND PRACTITIONERS. By Rai Bahadur Jaising P. Modi, L.R.C.P. & S., L.F.P.S., Lecturer on Medical Jurisprudence, King George's Medical College, Lucknow. With an Introduction by Lieut.-Col. E. J. O'Meara, F.R.C.S., D.P.H. Second edition. Cloth. Price, 12 shillings net. Pp. 497. London: Butterworth & Co., 1920.

This is an interesting book written for use in the medical colleges of India by an experienced teacher and health officer. All the phases of public health work usually treated in a book of this character are touched on, but particular stress is laid on subjects of special interest in India. The author is apparently more familiar with English than with American methods in sanitation. For example, the brief paragraph on chlorination of water supplies contains no mention of the use of liquid chlorin. We cannot agree with some of Dr. Modi's inferences with respect to air-borne infection, particularly that regarding sewer air as a factor in the spread of disease. Also, the subject of room disinfection following contagious diseases is treated from a point of view fast disappearing among up-to-date American health officers. In general, however, the subjects are adequately and sanely treated. A few discussions of particular interest might be mentioned. For example, the chapter on personal hygiene portrays living conditions which are found rarely, if at all, in this country. The subject of malaria is unusually well treated, as are also plague and cholera. The book is a valuable contribution to the literature on public hygiene in tropical countries.

THE GENUINE WORKS OF HIPPOCRATES. Translated from the Greek with a Preliminary Discourse and Annotations. Two volumes in one. By Francis Adams, LL.D. Extra muslin. Price, $5. Pp. 366. New York: William Wood & Company.

The publishers have reissued under one cover the two volumes of the original translation by Francis Adams of the Works of Hippocrates. This is a well known translation, copiously annotated, originally published under the auspices of the Sydenham Society. The name of Hippocrates stands next to that of the mythical Esculapius as the father of medical science. All who presume to follow medical science should be familiar with his work; if he had written only the first of his famous aphorisms he would have contributed enormously to medical science:

> Life is short, and Art long; the occasion fleeting; experience fallacious, and judgment difficult. . . . The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants and externals cooperate.

MOTHER AND CHILD. By Edward P. Davis, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College. Fourth edition. Cloth. Price, $2.75 net. Pp. 278, with 33 illustrations. Philadelphia: J. B. Lippincott Company, 1921.

This well known book has been revised and brought up to date by the author, and numerous well-chosen illustrations have been added. It is a valuable book for the aid of mothers, especially, the part assigned to the child. Mothers will find all the information they may need on the care of the child, such as the feeding and the treatment of diseases incident to childhood.

Miscellany

THE OFFICE OF IMPERIAL PHYSICIANS, PEKING*

E. V. COWDRY, PH.D.
NEW YORK

Admission to the Office of Imperial Physicians was obtained through the kindness of the emperor's tutor, Mr. R. F. Johnston, who gave me a card of introduction to Mr. Ch'i Ling, a minister of the household. Mr. Ch'i received us in his yamen with great courtesy and made arrangements with the director of imperial physicians for our proper reception. My thanks are also due Mr. Ma Kiam, of our Department of Chinese, who, with his intimate knowledge of Chinese classics, has helped me immensely.

The sentry in a gray uniform, taking it easy at the entrance, is symbolic of the respect with which the present republican government seems to regard all monarchical institutions (Fig. 1). On Chinese New Year, and other festal occasions, the president, or his representative, calls on the emperor in his palace in the Forbidden City. The emperor is said to receive from the republic $4,000,000 Mexican a year as an honorarium in consideration of his partial abdication. A few heads are lopped off after each attempt at restoration and the emperor continues to be treated with deference. From his private purse he maintains the Office of Imperial Physicians and several other Manchu organizations and yamens. The rebuilding and elaborate decoration of these offices, after their destruction by foreign troops during the Boxer uprising in 1900, is indicative of the tenacity with which the Chinese cling to their traditions.

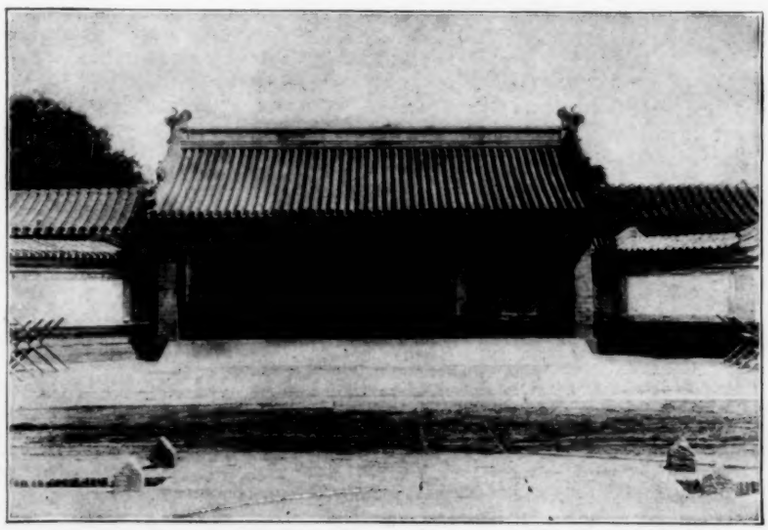


Fig. 1.—The sentry in gray uniform resting at the entrance symbolizes the respect with which the present republican government regards all monarchical institutions.

Visitors are usually received at the entrance and are conducted through spacious court yards to the library, where tea is served and the usual compliments are exchanged. The official textbook called the "Golden Mirror" occupies a place of honor on the central table (Fig. 2). It was written under the supervision of the Emperor K'ang Hsi (1661-1722 A. D.) from originals attributed first to the Han Dynasty (206 B. C. to 220 A. D.) and still earlier to the mythical Yellow Emperor (2696 B. C.), who is considered to be the father of Chinese medicine. Perhaps no other medical book has held its popularity through so many centuries. Even today, about two hundred million Chinese are content to be treated in accordance with its dictates, so that, in a very real sense, it is for them an arbiter of life and death.

It consists of eight large volumes in Chinese cases covered with blue cloth. Each volume contains from six to twelve books bound in imperial yellow. It teaches that the air passes through the larynx to the heart and other palpable absurdities. Turning over the pages, we come upon many interesting drawings indicating different disease conditions, such as the "grain pustule sickness" (erysipelas) in children and in adults. There are also charms and mystic diagrams in profusion. The "Sixty Year Cycle of the Forces of Nature" is very popular. Diagrams illustrating the relation between masculinity and femininity are not only of common occurrence in the "Golden Mirror" itself but are used as symbolic decorations in many of the buildings.

After leaving the library, visitors usually inspect some native drugs in an adjoining room and then pass through the north court, reception hall and south court to a small shrine where a large brass statue is kept. A suitable gratuity to one of the attendant coolies results in the speedy removal of all the clothing, the altar and sacrificial vessels so that the acupuncture holes may be closely examined (Fig. 3). The girdle about its loins is pure camouflage because all the external genitalia are omitted in deference to Chinese antisexual feelings. The holes indicate the proper places for the insertion of needles in various diseases, the idea being that all ailments are due to an improper association between the various circulating male and female principles which consequently require liberation. In the Golden Mirror:[1]

"Life is said to depend on the action of a female-principle which embraces a male-principle. These principles are opposite powers of vigor or strength which are equal in weight. When they are properly balanced, there will be no disease of any kind and the person will be productive and healthy. These principles are distributed quite differently in the body. The exterior is male and the interior is female; the back male and the abdomen female; the viscera male and the parenchymatous organs are female. Each principle has three degrees in quality, namely: great female principle, female principle proper and young female principle; great male principle, male principle proper and young male principle. These three degrees of principle are evenly distributed in their respective organs and viscera. . . ."

Miniature statues of this kind are used in China for instruction in different ways. We read that one method is to cover the body with a layer of paraffin and paper, to fill it with water and to let the novices try their skill at locating the holes with needles. If they are successful, the water gushing forth typifies the liberation of male and female principles from the living body. But very little, if any, instruction is now given in the Office of Imperial Physicians. Images are worshipped, not used: good food is offered and cheap incense burned lavishly.

From this small shrine we are led to a large temple, at the entrance to which some of the officials consent to group themselves for a photograph (Fig. 4). Within the temple, large gilt images of the Emperors Huangti, Fuhsi and Shennung

* From the Anatomical Laboratory, Peking Union Medical College.

1. From a translation (or paraphrase) of a portion of the "Golden Mirror" by E. T. Hsieh: A Review of Ancient Chinese Anatomy, Anat. Record **20**: 101, 1921.

are worshipped during the spring and autumn festivals.[2] Shennung and Fuhsi are thus idolized because they are credited with the invention of writing, about 4,000 years ago. Huangti is even more highly venerated since, in addition to being the father of Chinese medicine, he is also supposed to have invented clothing, as may be seen in the accompanying photograph (Fig. 5).

In these imperial offices, 110 physicians are registered (March, 1921), none of whom have any foreign training. Two of them visit the Emperor Hsuan Tung in the Forbidden City about twice a week and make prescriptions when necessary. One can imagine the deference with which they approach the "Son of Heaven" and the solemnity with which they beg him to take spirit pills (tapeworms soaked in children's urine) or some other remedy popular for at least a thousand years. It is said that the emperor is not permitted to seek the advice of foreign trained physicians, but I have been unable to confirm the statement.

The visit helps to give us a true conception of the difficulties which have to be overcome in the introduction of modern medicine into China. The book of authority, the idolization of leaders long since dead and the complete satisfaction with present conditions, are obstacles to progress which have to be reckoned with. No wonder that "a modern chinese anatomist" expresses himself thus, quoting from John Dudgeon's (1919) translation:[3]

"If I do not, however, speak there are many diseases whose origin cannot be known, so I cannot but speak out. Not only do the medical books assert that memory and mind come from the heart but the learned, in treating of reason, virtue, and conscience, all say that intelligence and memory are located in the heart, because at the beginning people did not know what the heart governed; they knew that it lay in the chest; they did not know that at the two sides of the larynx and gullet there are two air vessels, which at the front of the lungs unite to form one vessel which enters the heart; then it goes out of the left side of the heart, passes the lungs, and enters the spine. This is the wei-tsung vessel. In front it connects with the ch'i-fu and spermatic road; behind with the spine; above with the two shoulders; in the middle with the two kidneys, and below with the two lower extremities. This is the vessel that preserves the original or vital air and juices.

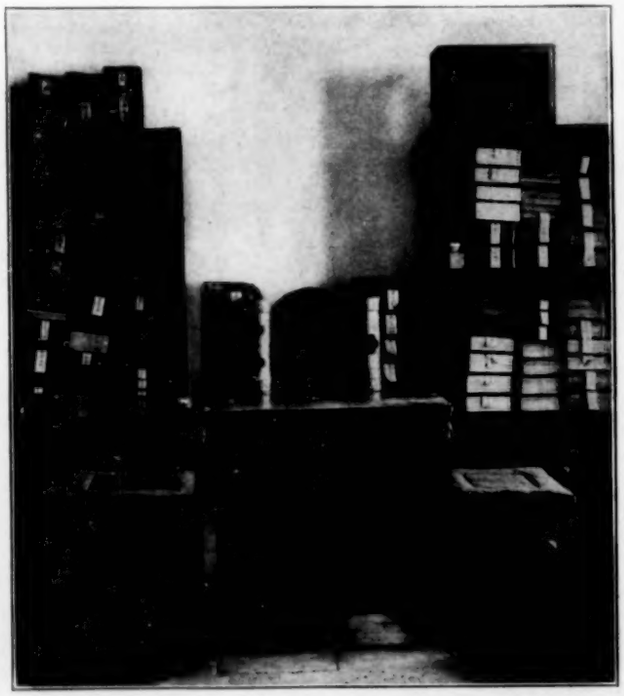


Fig. 2.—The official textbook, called the "Golden Mirror," occupies a place of honor on the central table.

Fig. 3.—A suitable gratuity to one of the attendant coolies results in the speedy removal of all the clothing, the altar and sacrificial vessels so that the acupuncture holes in the statue can be closely examined.

This air goes out and in the heart; how then can the heart produce mind and store up memory? Why do I say that the mental qualities are in the brain, because food and water produce air and blood which grows the flesh; the pure delicate juice is converted into marrow which advances by the spine and so up to the brain and therefore is called nao-sui (brain marrow).

"In regard to the nature of the pulse, what I inform posterity is the truth; if there are those who speak or write not according to what they know, or believe and assert thmselves to be genii and do not conscientiously discourse of things, they must suffer punishments at the hands of Heaven.

"The ancients did not know that the pulse was the air vessels, although they discoursed on a great variety of pulses and their positions, in which every man was different. They said there were twenty-seven characters of sorts and I dare not say they were wrong in their doctrine of the pulse, not because they have not a leg to stand upon (in Chinese no footing for their views) but because posterity in their treatment of disease would have no doctrine of the pulse to go upon. By feeling the pulse and knowing whether a person is going to live or die is easy, but to decide on the disease is difficult.

"Lang Chai opposed my view. He said the hearts of animals contained blood, why is it that man's contains none? I replied by asking him what animals' heart contained blood? And he replied that in ancient prescriptions there is mentioned the sui-sin-tan pills taken to cure madness. These pills are made of a species of Wickstraemia (kan-sui) ground to powder and mixed with pig's blood and thereof the pills are made, and is this not proof that the pig's heart contains blood? I replied that this was an error of the ancients; it was pig's blood but not out of the heart. When the heart is cut with a knife the blood in the heart comes from the cut walls of the chest, and if the heart be not cut there is no blood within it.

"If persons do not read and study books and think by reading mine to have sufficient knowledge, that is not my fault but their own. . . ."

2. The ritual is described in detail by de Harlez: Mém. Acad. roy. d. sc. de Belg., **51**: 417-426, 1893.

3. Dudgeon, John: A Modern Chinest Anatomist and Other Discourses, Nat. M. J. of China **5**: 50, 1919. (Unfortunately, Dudgeon does not give the original Chinese references.)

The fundamental problem is "the transformation of the mind of China," to use the title of one of Professor Dewey's papers recently published in *Asia*, for the same causes hold back development in many lines. Dissatisfaction with the past and present, and a reaching out of the nation as a whole for improvement, are the first essentials. The Chinese intellect is certainly not inferior to the Japanese. What holds them back is their reluctance to get together and stick together on a national basis in some constructive program, which involves a certain measure of idealism coupled with a willingness to forego undue profit. That they are able to do so is shown by the coherence of business guilds and certain industrial enterprises.

The beginning which has been made in the organization of federal and provincial medical schools is worthy of the highest praise; but they are "like houses built upon the sand," with no stability, subject to every passing storm of revolution and political intrigue. Their success and very existence usually depend on the health and strength of their director. They are, in other words, "one man institutions." China has been a monarchy for so long that the people have not learned the efficacy of sharing responsibilities. "A virtuous ruler is like the pole-star, which keeps its place, while all other stars do homage to it."[4]

The consequences are serious. When the director becomes indisposed, or receives some other appointment, the faculty are helpless because they have taken no part in the organization and do not command the respect and confidence of the federal or provincial authorities, so that the whole enterprise is in danger. On the apppointment of a new director, a radical change in policy may be expected with failure to abide by the spirit and letter of agreements made by the first incumbent. One college has had to close its doors in the absence of its director; in another the members of the faculty are dependent on the personal influence of their director with the government for securing their salary from month to month.

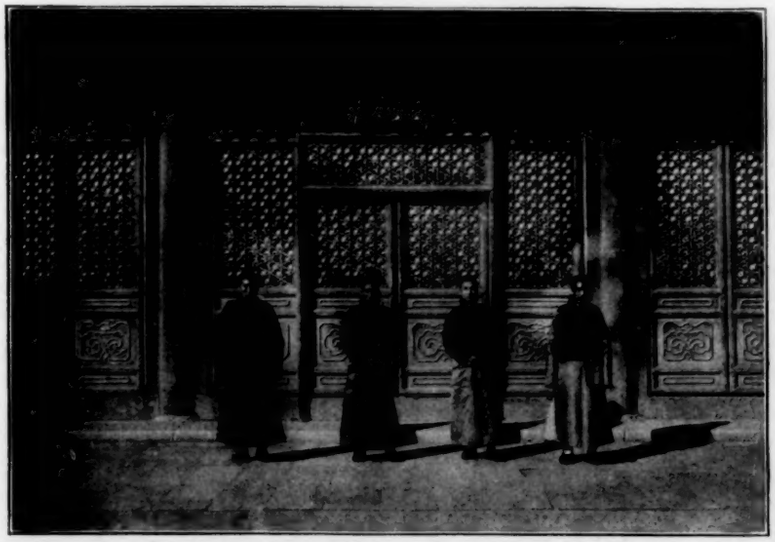


Fig. 4.—One is led to a large temple at the entrance to which some of the officials consent to group themselves for a photograph.

4. Giles, Lionel: The Sayings of Confucius. The Wisdom of the East Series, London, John Murray, 1912, p. 39.

In order to maintain continuity of effort and business-like efficiency, the director must learn to share his responsibility with members of the faculty. This, if he is the right kind of man, he will gladly do. Does not Confucius say, "The distinguished man is anxious to put himself below others." He will be happy in seeing his institution firmly established through careful organization and the deputation of authority to others. With the success of the college at heart, he will find it no hardship to retire a little from the limelight; for it cannot be denied that the outlook of a single individual is narrow compared with that of a small but representative group which is actually doing the work of the college. A single individual is likely either to make hasty decisions, or to procrastinate; to be influenced by personalities, by indigestion and other factors from which a group, being a collection of units, is immune. Group action is more conservative, more broadminded, and more permanent: an interregnum can be more easily bridged over and coherent team-work made possible.

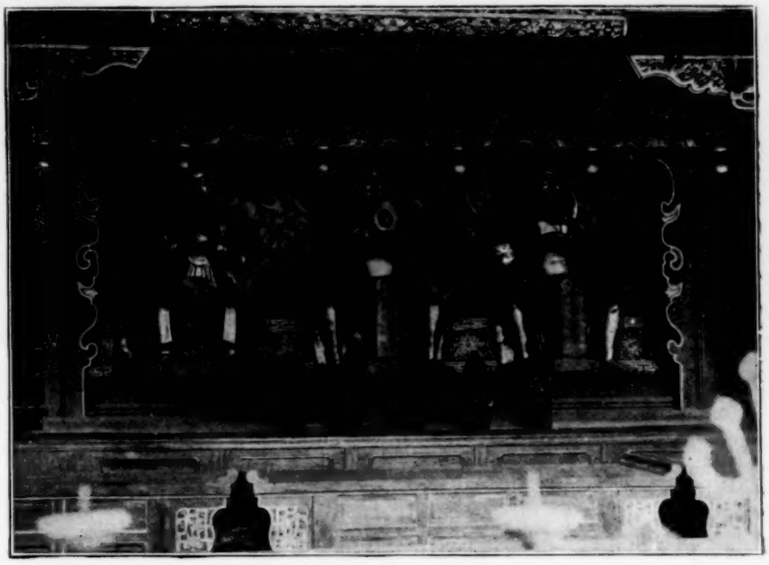


Fig. 5.—Within the temple large gilt images of the Emperors Huangti, Fuhsi and Shennung are worshipped during the spring and autumn festivals.

As the members of the faculty gradually come to a realization of their own personal responsibility for the success of the institution as a whole, their interest increases and *esprit de corps* develops. Individual loyalty to the director is overshadowed by devotion to the institution and to the ideals for which it stands. Directors will come and go; but it is hoped that institutions founded by the Chinese will become permanent national assets.

Some Chinese shoulder their responsibility bravely and press on as true pioneers; but how small is the minority and how overwhelming the inertia of China! To strengthen these leaders is the aim of every one who has China's interest at heart.

It will not be an easy task. Real advances in medical education cannot be expected before a sound and just government has been established, responsibility for which rests fairly and squarely on the shoulders of the Chinese people. It is unfair to cast all the blame on the official class because after all the officials are Chinese and continue to hold office through the tolerance of other Chinese. The government of

any country is just as good, or just as bad, as the people deserve.

Lao Tzu's doctrine of inaction,[5] "Leave all things to take their natural course and do not interfere," has entered into the very fiber of the nation during centuries of famine, flood and plague, and it has bred a colossal indifference. How opposed it is to the old English motto, "Time and tide wait for no man!" The disciple Tseng Tzu said of Confucius,[6] "Our master's teaching simply amounts to this: 'loyalty to oneself and charity to one's neighbor.'" Self first and the other fellow next: individualism before nationalism. The leaders of young China would do well to instil the nation generally with some of the strong Roman patriotism, expressed in the words: "Dulce est pro patria mori," at the same time being careful not to create the dangerous Prussian feeling that "the state can do no wrong." This change cannot be accomplished at a wave of the hand; but those who have acquired a slight knowledge of China through two or three years' residence, as well as others born and bred in China, almost without exception, express faith in the ability of the Chinese people to work out their own salvation with foreign encouragement but not foreign control.

In his most recent article (May, 1921) Professor Dewey says: "It is no wonder that wherever a few are gathered together in China, the favorite indoor sport is 'saving China.'" It is to be hoped that the day is not far distant when this "sport" is not only indulged in by foreigners with a sprinkling of Chinese, but can boast of some slight popularity among the masses of the Chinese themselves without foreign influence. There is truth in the saying that "where there is a will there is a way." At present the "will" is lacking in the great masses of population who count for so much.

Medicolegal

Evidence of Performance of Other Abortions

(State v. Bassett (N. M.), 194 Pac. R. 867)

The Supreme Court of New Mexico says that the defendant was convicted of murder in the second degree under a statute which provided that every person who should administer to any woman pregnant with a quick child any substance, or use any instrument or other means, with intent thereby to destroy such child, unless it was necessary to preserve the life of the mother, should, in case the death of such child or mother should be thereby produced, be guilty of murder in the second degree. The prosecuting witness testified that at the time the abortion occurred she was pregnant with a quick child, and that the pregnancy had progressed about six months. The defendant admitted that he aborted the woman, but contended that at the time she went to his sanatorium and he made his first examination of her the fetus was dead, and that it was necessary, in order to save her life and in accordance with correct medical practice, to remove the fetus with instruments, which he did. But the woman was allowed to testify, over his objection, that some months later she again visited his sanatorium and that he there performed another abortion on her, when she had been pregnant about two months. The district attorney explained that this testimony was to show the intent with which the defendant committed the first abortion. That brought up the question of when, and when not, in cases of this kind, evidence of other abortions is admissible in the prosecution for the given particular act. The court hesitates to depart from what appears to be the current of authority on the subject, but it cannot but be convinced that there was an entire lack of relevancy of the proof offered of the second abortion in this case. It did not tend to prove that the woman was aborted on the first occasion unnecessarily and when it amounted to murder of a human being. Wherefore it is held that the evidence of the second abortion was inadmissible, and the judgment of conviction is reversed, with directions to award a new trial. In other words, the court holds that, under the statute, the gist of the offense was the intent to murder a quick child by means of aborting the mother; and, in a prosecution under that statute, proof of other abortions on women wherein the child had not quickened was not relevant, and should be excluded. If there was no quick child in the woman's womb when the abortion was resorted to, there was no crime under the statutes of New Mexico, as they existed at the time of the occurrences in this case. How, then, could it be said that producing an abortion on a woman pregnant, but when the fetus had not yet quickened, would tend in the remotest degree to show that a physician would deliberately commit murder of a quick child still in its mother's womb? The acts in the two cases are entirely distinct and dissimilar. One involves murder; the other involves nothing more than a disregard of the finer feelings of humanity with which the law, in the absence of statutory regulation, is not concerned. If it had been shown that the defendant had aborted other women pregnant at the time with quick child, the evidence would undoubtedly have been admissible. That would have tended to show that the defendant, when he aborted the prosecutrix, intended to commit murder by the use of instruments on the mother, and that he probably did not, as he testified, abort her for the purpose of preserving her health, or possibly her life.

5. Giles, Lionel: The Sayings of Lao Tzŭ, The Wisdom of the East Series, London, John Murray, 1917, p. 32.

6. Giles, Lionel: The Sayings of Confucius, The Wisdom of the East Series, London, John Murray, 1912, p. 118.

Federal Court Upholds State Law and Board

(Lindsey v. Allen et al. (U. S.) 269 Fed. R. 656)

The United States District Court, in Massachusetts, says that this was a bill in equity brought against the attorney general, two district attorneys, and the members of the board of registration of that state. The board was established by an act approved on June 7, 1894. By Section 3 of the act, every person who had been a practitioner of medicine continuously for a period of three years next prior to the passage of the act was entitled to registration and a certificate, on payment of a fee of one dollar; but by Section 8, on and after Jan. 1, 1895, all applicants were to be examined. The bill alleged that the plaintiff had practiced medicine for more than eight years before the passage of the act, calling himself Dr. and M.D., and that he did not know of the statute until January, 1898, and then tendered a dollar to the board and demanded a certificate, which was refused. It also alleged that he continued to practice without molestation until 1914, and had discovered remedies of which it is enough to say that they were alleged to cure tuberculosis, blood clots, fistulas, gallstones and syphilis. Since 1914, he had been convicted several times of practicing medicine without a license, etc., and in one case was discharged on entering into a stipulation "to never again engage in the illegal practice of medicine."

The court considers that the charges of malice and improper motives against the board were immaterial, even if otherwise sufficient, because, whatever may have been the animus of its members, it was its plain duty under the statute to refuse a demand for a certificate without examination, when the demand was not made until 1898. Section 8 limited the operation of Section 3, and even if the time allowed was short, the plaintiff was not entitled to wait three years. As to the prosecutions, it seems that the plaintiff was guilty under the act, and here again the motives for instituting them were immaterial. It was alleged that the board permitted others to practice who had never passed an examination, but nothing appeared to show that the act was administered in an unconstitutional way. The court perceives no valid ground open on the bill for contesting the constitutionality of the act. As to the plaintiff's right to call himself M.D. and to practice medicine, it is enough to say that the law gave him a fair chance to preserve the supposed rights, and that he let it go by. Whether M.D. does not convey

the implication that the person affixing those letters to his name has received a degree from an authorized source and therefore was in this case a fraud in contemplation of law, the court need not consider. The exception from the operation of the statute of some classes of practitioners that many people would regard as swindlers does not go beyond the right of the state to have its own convictions and its own policy and to embody them in law.

In view of what the court has said, it is enough to add that at least there is no such clear infraction of the plaintiff's rights or impediment to his asserting any defense that he may think he has under the constitution of the United States if he is indicted again as to warrant this court's interfering with the regular processes of justice in the state. There is no deterrent. The stipulation above mentioned, even if it was more than an understanding outside the record, which did not appear, would present no obstacle to any defense on a new indictment, probably would be disregarded for all purposes if the statute should be held unconstitutional, and whatever its effects, was the act of the plaintiff, not of the statute. If this bill should be entertained, any criminal might seek an injunction in the courts of the United States to prevent the regular administration of the state laws whenever a question as to their constitutionality could be raised. Here, however, the court sees no ground for even a reasonable doubt that on the question before it the act was within the power of the state. Motion for injunction denied. Bill dismissed with costs.

Diagnosing and Treating Diphtheria as Quinsy

(Clark v. George (Minn.), 180 N. W. R. 1011)

The Supreme Court of Minnesota, in reversing an order that denied a motion for a new trial after a verdict had been directed in favor of the defendant, says that a physician is not ordinarily liable for error of judgment in a doubtful case. He does not insure either correct diagnosis or correct treatment, but he is required to possess the skill and learning which are possessed by the average member of his school of the profession in good standing in his locality, and to apply that skill and learning with reasonable care. If he fails in this, he is negligent and may be held for injury resulting therefrom.

The plaintiff's wife, 34 years old, was taken ill one evening. Her throat was sore and swollen and her temperature somewhat above normal. The defendant diagnosed her case as quinsy, lanced her throat first on one side and then on the other; said probably some pus would come, and that she would be better in the morning. In the morning he asked whether any pus had come and was told by the patient that none had. He lanced her throat again. She could not speak above a whisper, but asked him to look at her husband's throat. He did so and immediately said, "You have diphtheria, and that is what is the matter with her." He then took a culture, went away, and in fifteen or twenty minutes came back and again pronounced the patient's case as diphtheria. He then changed his treatment and administered antitoxin, but the patient died on the following day. He made a death certificate, stating that the cause of death was diphtheria with general edema of the pharynx. In a memorandum, submitted to the health department with the culture on the day before her death, he gave the diagnosis as suppurative tonsillitis. From the statement in the death certificate and all the other testimony in the case, the court thinks that a jury might fairly infer that the patient was suffering from diphtheria from the beginning, and that it was doubtful whether they could infer that there was any other ailment. A physician who was called as a witness testified that it was not good practice to lance a throat infected with diphtheria, as it would spread the infection through the system, and that in his opinion the operation was a contributing cause of death. If the foregoing testimony stood alone, the court thinks there would be no question of its sufficiency to sustain a verdict that the defendant was negligent, both in the manner in which he proceeded to diagnose the case and in the treatment administered. The doubt in the case arose from the fact that a sister of the patient, when asked whether any pus came out at the time of the first lancing, answered, "A little," while the expert witness mentioned testified that it was always proper to lance a pus abscess, even if diphtheria was present. However, notwithstanding this testimony, the court is of the opinion that the question of the defendant's negligence was for the jury. Under the evidence, the testimony of the sister was not conclusive of the existence of a pus abscess, while the testimony of the expert witness was to the effect that even if there was a pus abscess the lancing of the throat on the second morning was not good practice. A jury could infer that the defendant should have known on the occasion of the second call that his first diagnosis must have been wrong and that to lance again might bring disastrous results.

It was incumbent on the plaintiff to prove that but for the negligence of the defendant death would not have occurred. If the evidence left the cause of death a matter of conjecture, the defendant was entitled to a directed verdict. The plaintiff was, however, not required to prove causal connection by direct evidence. If circumstantial evidence furnished a reasonable basis for the inference that the negligence of the defendant was the cause of death, the case should have been submitted to the jury. In view of the natural tendency of the lancing to spread infection and of the evidence that the patient died of sepsis or infection in so short a time thereafter, the court is of the opinion that the jury might infer that the proximate cause of death was the surgical act.

Two members of the court dissent, saying that when the defendant called at midnight to treat the patient he was informed that she was subject to attacks of quinsy; that there was no evidence that would justify a finding that after he called proper diagnosis and treatment could have saved the woman's life, and that unless medical skill could have prevented death, he should not be held in damages.

Knowledge and Fraud of Medical Examiner

(Hale v. Sovereign Camp Woodmen of the World (Tenn.), 226 S. W. R. 1045)

The Supreme Court of Tennessee, in affirming a decree in favor of the beneficiary where there was a controversy as to whether the insured or the local medical examiner of the defendant had given it incorrect information, says that it has held that the knowledge of the local medical examiner of a fraternal benefit society was imputable to the society in a case in which the true facts concerning the physical condition were stated to the examiner and he inserted false statements in the report of his examination made to the society, it being deemed immaterial that the application recited that the local physician should be treated as the agent of the applicant. While there is some authority to the contrary, this rule as to the knowledge of a local physician being the knowledge of his principal, the assurer, is almost everywhere accepted. Under these authorities, where the applicant for insurance truthfully answers the questions propounded to him by the local physician of an insurance company or a fraternal benefit society issuing insurance, and the physician inserts false statements in the blank furnished him and makes a false report to his principal, and a policy issues, the assurer is held to be estopped from relying on such false report. This is for the reason that the agent of the assurer employed to procure this information was truthfully advised by the assured. Such knowledge having been acquired by the special agent in the execution of the special authority he possessed, this knowledge will be ascribed to the principal. The principal therefore, having knowledge of the truth, will not be permitted to rely on the fraud of its agent for which the assured was in no way responsible. Nor does the court see any difference in the application of the rule of law in a case in which the local agent has been guilty of negligence and in a case in which he has been guilty of actual fraud. The basis of the liability of the assurer in such cases is the knowledge of the special agent acquired within the particular line of his duties with which knowledge the principal is charged. It can make no difference whether the general officers of the assurer are misled inadvertently or intentionally by the local agent.

Society Proceedings

COMING MEETINGS

American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
Colorado Congress of Ophthalmology and Oto-Laryngology, Denver, July 29-30.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

AMERICAN PEDIATRIC SOCIETY

Thirty-Third Annual Meeting, held in Swampscott, Mass., June 2-4, 1921

(Concluded from page 227)

Studies of Anaerobic Bacteria in the Infant's Intestine

DR. LANGLEY PORTER, San Francisco: Our work indicates that the anaerobic flora of the infant's stools is relatively simple, probably made up of a few types, the most prominent being *B. welchii, B. bifermentans, B. sporogenes,* and a terminal end-sporulating organism of the tetanus amorphous group. Probably, the first anaerobe to develop in the infantile intestinal tract is *B. bifermentans.* One group of infants was fed on breast milk, using three supplements: (1) sterile water; (2) Ringer's solution and (3) saccharin water. Another group was kept on modified cow's milk, also using the three supplements. The stools of the babies fed on breast milk showed the typical aciduric *B. bifidus* flora, while those fed on modified cow's milk showed a flora of more complex nature, approximating a semiputrefactive flora. From clinical observations it has seemed that there might be a relationship between the intestinal flora of the mother and that of the child with special reference to the presence of *B. welchii.* Our observations failed to confirm this belief. While *B. welchii* has been found in all types of stools, normal, putrefactive and saccharolytic, there was a very great difference in the numbers of this organism found in each case, and it is possible that further studies might show these quantitative differences to have some chemical significance. The symbiotic relationships of aerobe to anaerobe is one of interest. It may be that certain symbioses promote the growth of anaerobes whose by-products are harmful.

DISCUSSION

DR. J. H. MASON KNOX, Baltimore: Some years ago Dr. Porter and I made a short investigation of normal children in the attempt to find whether the gas bacillus was present in the intestines of infants. We found that practically all the infants in the maternity ward showed *B. welchii,* not only microscopically but by inoculation in rabbits. It took a week or ten days for young babies to develop this bacillus in the stools. It is widely distributed in nature and takes that time to become general in the infant's intestine.

The Four Hour Nursing and Feeding Interval

DR. THOMAS S. SOUTHWORTH, New York: The four hour nursing interval has proved helpful within limits, but is too sweeping for universal application. It seems to be admirably adapted to the vigorous normal infant at full term, nursing a normal mother with an abundant supply of good breast milk. The longer interval has proved distinctly superior when there is tenderness of the mother's nipples with risk of infection and mammary abscess and in cases of over rich high fat breast milk. It is especially adaptable to cases that depart from the normal, in short, to cases of maladaptation. Adopted too enthusiastically, as a routine, it works injury to other important types of maladaptation. Premature infants require more frequent feeding than those born at term. Of full term infants there is the sluggish, dormant infant with difficulty stimulated to take a sufficient quantity of breast milk in five nursings; there is the baby who is too weak or learns with difficulty to take the nipple and does not empty the breast; the nervous and inexperienced mother who does not know how to cooperate with the baby and defeats its efforts; there is finally the large and perhaps increasing number of mothers whose breast milk, while scanty and insufficient, is capable of being made abundant enough to establish maternal nursing, wholly or in part, if stimulation is maintained with adequate frequency. For these cases the four hour interval is irrational and injurious. Complemental feedings given at the conclusion of a nursing to make up deficiency in breast milk are always justifiable when occasion demands and should be employed more frequently, but the substitution, ignorantly made, of one or more bottle feedings to take the place of the already too infrequent breast nursings is the most scientific way of drying up breast milk and precipitating unnecessary weaning. In many instances complemental feedings, coupled with a return to shorter intervals, produce the best results.

The Effect of Compressed Yeast in the Food of Infants

DR. MAYNARD LADD, Boston: The food for an infant must contain the fat-soluble A, water-soluble B and C antiscorbutic vitamins, and in sufficient amounts. There is a possibility that the conclusion reached as a result of feeding these vitamins to laboratory animals may be applied too directly to infants. Milk is not a natural food for these experimental animals, except for very limited periods, if at all. In view of the advertisements in some medical journals and the fact that certain commercial firms are taking advantage of the present interest in vitamins to put into the hands of physicians and of the public generally products which, on the basis of animal experiments, were recommended as valuable growth promotors for the human infant, there is danger that the general practitioner will be directed away from the principles of sound and scientific feeding. The ten babies in our series were all difficult feeders, and they were carefully observed for different periods. The weight charts give evidence of satisfactory development, but careful analysis of the rate of weight development during the periods with yeast and without yeast do not show any benefit that can be attributed to the yeast itself. One child developed furunculosis while taking the yeast, obviously from contact with a baby similarly affected, and in that case it had no prophylactic value. Ill effects were observed in one baby that developed a severe fermentative diarrhea soon after the yeast was begun; later, when this was corrected, it took another dose with no bad effects, but still without benefit to its nutrition.

Abdominal Pain and Throat Infection

DR. JOSEPH BRENNEMANN, Chicago: Abdominal pain occurs often to the exclusion of all other subjective symptoms in the course of throat infections in children, including the whole series of upper respiratory tract infections. Inflamed and enlarged mesenteric and retroperitoneal glands, nontuberculous in origin, occur in infections having their primary seat in the throat. The pathogenesis of such enlarged glands is a matter of speculation, as is also the question as to whether they themselves cause the abdominal pain. The true cause of the pain may be, at least in part, a localized enteritis or colitis, rather than lymphadenitis itself, and possibly some specific or selective localization may account for the fairly constant pain in the umbilical region.

Protein Requirements for Children

DR. L. EMMETT HOLT and MISS HELEN FALES, New York: The total protein requirement is, to a large extent, dependent on the character of the protein given. Proteins differ greatly in their amino-acid content. Vegetable proteins are lacking in amino-acids essential for growth, while animal proteins are much richer in these substances and correspond more closely in composition to the proteins of the body. While vegetable proteins may be sufficient for maintenance, animal proteins are needed for growth. The nursing infant receives from 8 to 12 gm. daily up to the ninth month. This is equivalent to about 1.5 gm. per kilogram and is sufficient for growth and maintenance during the most active period of growth. The reason is to be found in the very high grade of the protein of woman's milk, which is especially rich in essential amino-acids. When cow's milk is the food, a much larger amount of protein is required, as the protein of cow's

milk is deficient in some of the important amino-acids, especially cystin. It is therefore necessary to give two or three times as much protein as is contained in woman's milk. Low protein or an insufficient amount of protein is one of the reasons for the failure of condensed milk as a food and also for the want of success which attended the use of such milk formulas as those which were based on the percentage composition of woman's milk. The amount of protein taken by 100 healthy children in their usual diets averaged about 40 gm. daily at 1 year; 60 gm. at 6 years; 80 gm. at 12, and 115 gm. at 16. About two thirds of the protein taken was of animal origin, and one third was vegetable protein.

Rôle of Fat Soluble Vitamin in Rickets

DR. ALFRED F. HESS, New York: Twelve children were fed on summer milk (from cows in pasture) during the winter, and eight children were fed on winter milk in summer. The same percentage of children in both groups developed rickets. Diet apparntly did not make any difference. The children treated with the ultraviolet light were cured very quickly, as shown by the calcification of the epiphyses, and this occurred in the winter time. In March and April we tried sunlight, exposing the children gradually to the sunlight, and in a few weeks calcification began. Some of these children were getting dried milk, some protein milk and some condensed milk. They had been on these diets for at least six months. Active rickets reaches its highest incidence in January and its minimum in July. The healing of rickets is lowest in January, and reached its height in August or September. The ultraviolet light treatment was given three times a week for three months, the time of exposure being increased to twenty minutes, at a distance of 125 cm. These observations point to the fact that there is a hygienic factor concerned in the etiology of rickets. It might be said that exercise as well as sunlight plays a rôle in the etiology of rickets, but these children did not exercise more while or after they were subjected to the light treatment than before. The evidence points to the value of sunlight in the prevention of rickets and shows the importance of sunlight in child-caring institutions.

DISCUSSION

DR. ROWLAND G. FREEMAN, New York: It has always seemed to me that all we know about rickets points to the fact that it is a disease produced by darkness. About all the rickets we see occurs in children who have come from a tropical climate. We see it in all the tropical races coming to America.

DR. E. C. FLEISCHNER, San Francisco: I have come to feel that the outside environment is a factor in the etiology of rickets. I think the greater amount of sunlight and the outside environment explains, in part, at least, why there is less rickets in California than in the East. It would be interesting to know whether there is less rickets among the negroes in the South than among those in the North.

DR. L. R. DEBUYS, New Orleans: Rickets is very common among the negroes in the South, more so than among white children. It is just as common in rural districts as in the cities. The diet and living conditions are about the same in the city as in the country.

DR. HENRY HEIMAN, New York: I believe there is an individual and a predisposing factor. Negroes and Italians are predisposed to rickets.

DR. ALFRED F. HESS, New York: I did not wish to take up the subject of predisposition. When on some milk, 25 per cent. of the children will get rickets, while the others under the same conditions will show no sign of the disease. This shows that there is some individual idiosyncrasy. I wish to emphasize the cure of rickets by ultraviolet light and sunlight.

Clinical and Roentgenologic Study of Enlarged Thymus in Infants

DRS. KENNETH D. BLACKFAN and KARL F. LITTLE, Cincinnati: We have made a clinical and roentgenologic examination of the thymus both in normal infants and those who have presented symptoms referable to it. The results indicate that an area of dulness in the region of the thymus with a corresponding shadow in the roentgenogram occurs in a relatively large number of normal infants. That is due to to the thymus is shown by the fact that the shadow becomes smaller after exposure to roentgen rays. A thymus large enough to demonstrate by percussion and to show in the plate does not necessarily show symptoms.

DISCUSSION

DR. ALFRED FRIEDLANDER, Cincinnati: In our earlier studies we had precisely the same experience and theories to explain how the thymus produces the symptoms of thymic asthma. These theories have no support today. It may be that as many as 48 per cent. of children show an enlarged thymus, and a large percentage of them show no symptoms. If the symptoms of thymic asthma are present, even though the roentgen ray does not show the presence of an enlarged thymus, radiation should still be given.

DR. MAYNARD LADD, Boston: A child brought into the hospital with a temperature of 102 F. and convulsions died shortly afterward. There was nothing in the previous history to explain these symptoms and the sudden death. At the necropsy the thymus weighed 62 gm. May it not be possible that the symptoms are due to an internal secretion rather than to pressure?

DR. CHARLES G. KERLEY, New York: A child has been under my observation whose attacks of thymic asthma have been entirely relieved by roentgen-ray treatment.

DR. JOSEPH BRENNEMANN, Chicago: One should be skeptical of single roentgenograms as evidence of thymic enlargement, as the shadow varies with inspiration and expiration. The idea is prevalent that the symptoms of thymic asthma are aggravated for some hours after roentgen-ray treatment. Is that the common experience? If so, it would lead one not to give the roentgen-ray treatment when there is more or less aggravation of symptoms.

DR. FRITZ B. TALBOT, Boston: A short time ago one of the rabbits used for experimental purposes at the Massachusetts General Hospital died suddenly, and at the necropsy an enlarged thymus was found.

DR. LANGLEY PORTER, San Francisco: A mongolian idiot, 4 years old, died of pneumonia. At the necropsy the thymus weighed 55 gm.

DR. HENRY HEIMAN, New York: Thymic asthma, at least clinically, is a very rare disease and must not be confused with stridor, diphtheria infection and deformity of the glottis and epiglottis, or with latent spasmophilia.

DR. ROWLAND G. FREEMAN, New York: A tumor in the upper mediastinum which gets large and small with respiration is the thymus. In one case of severe thymic asthma coming under my observation, roentgen-ray treatment relieved the symptoms, though the thymus has not been reduced in size. Two other cases have been treated without reduction in the size of the thymus. One of these patients was afterward found dead in bed.

A Febrile Exanthem Occurring in Childhood

DRS. BORDEN S. VEEDER and T. C. HEMPELMANN, St. Louis: During the last year we have observed cases in which, after a period of high fever, lasting from three to four days, and terminating by crisis, an extensive macular or maculopapular eruption developed, limited chiefly to the body and coincident with the fall in temperature. The febrile period is characterized by an absence of all symptoms or signs except the fever. There is a leukopenia, which may be marked, and a relative lymphocytosis. Seemingly the infection is not contagious. While occurring chiefly between the ages of 1 and 2 years, the disease has been observed in infants of 6 months and older children up to the eleventh year. The condition has not been described before.

DISCUSSION

DR. THOMAS B. COOLEY, Detroit: We have seen these cases in Detroit where there is an outbreak of paratyphoid B fever. It is extremely difficult to differentiate the two conditions.

DR. HENRY F. HELMHOLZ, Rochester, Minn.: We have had a little epidemic at Rochester. In a group of cases, three in one family, the eruption was of the urticarial type and the

symptoms were rather more severe. The urticaria cleared up only after the repeated administration of epinephrin.

DR. J. CLAXTON GIDDINGS, Philadelphia: These cases have been occurring for years and are probably secondary attacks of rubella.

DR. HENRY HEIMAN, New York: In such cases the clinical diagnosis of intestinal toxemia accompanied by urticaria or erythema is frequently made. It would be interesting to study the milk supply.

DR. J. BORDEN VEEDER, St. Louis: None of these children were receiving any drug. There were no toxic symptoms. The children were mostly from the better classes. They were not getting milk from the same dairy.

Diagnosis of Tuberculosis in Childhood

DR. CHARLES H. SMITH, New York: Tuberculosis is not a universal disease of childhood, in this country at least. The diagnosis of the presence of tuberculous infection rests largely on the skin reaction, which is of value at any age. The activity of the tuberculosis must be judged by the temperature curve and by other signs of toxemia, such as malnutrition and anemia. The bronchial nodes are most commonly involved, yet give but few signs. D'Espine's sign is the best of these. When the D'Espine sign is elicited below the third dorsal vertebra, and especially below the fourth dorsal vertebra, it is very suggestive of tuberculosis.

DISCUSSION

DR. WILLIAM PALMER LUCAS, San Francisco: Another condition which may give rise to D'Espine's sign is a low grade influenza infection.

DR. LANGLEY PORTER, San Francisco: D'Espine's sign is a very valuable and much neglected addition to our clinical methods. I have never found D'Espine's sign below the fifth, and rarely below the fourth dorsal vertebra, when there was not some definite change in the mediastinal contents. The position of the patient is important in determining the site at which the sign is heard. We seat our patients with the back flexed and the head bent forward. There are many other conditions beside tuberculosis that give a definite whispered pectoriloquy as low as the seventh, eighth and ninth vertebrae.

AMERICAN GYNECOLOGICAL SOCIETY

Forty-Sixth Annual Meeting, held at Swampscott, Mass., June 2-4, 1921

The President, DR. WALTER WILLIAM CHIPMAN, Montreal, Canada, in the Chair

Fads and Fancies of Obstetrics

DR. RUDOLPH W. HOLMES, Chicago: In safe and conservative hands, maternal and fetal mortalities have decreased in private practice. The maternal and fetal death rates, in hospitals, have not shown an appreciable decline in 100 years. The fact that the death rate among the emergency cases (i. e., those sent in by medical attendants) is over ten times that of regular applicants in the New York Lying-In Hospital is a reflection on the preliminary medical training of the profession. A properly conducted prenatal clinic, combined with conservative conduct of labor, is a more certain method of routine interference in all parturient women, with intervention. The authorities who have fostered a peculiar method of routine interference in all parturient woman, with their imitators, have retarded the advance in obstetric care, and are part contributors to the high American mortalities incident to childbirth. It is lamentable that properly controlled midwives have less mortality than those who practice a routine intervention. The proponents of operative cults have produced no evidence to show that their systems are more worthy, less risky, and promise a higher conservation of life than carefully watched spontaneous labor. There are no more reasons why all parturient women should be delivered operatively than that all people should be inflicted with routine enemas or catheterization. Indications for obstetric operations demand revision. A wise conservatism in obstetrics will be more productive of ideal results than injudiciously used skill. Obstetric teaching is so deficient in most colleges that there should be a sharp and early improvement. So long as obstetric teaching is defective, so long will obstetric results be bad in practice. An obstetric curriculum should be devoted to practical instruction on the manikin, in the class room, and in the clinic; obstetric surgery should be a very small part of the coordinated whole. The proper place of the latter is in postgraduate courses intended for those preparing for the specialty.

Radium Therapy in Vulval and Vaginal Cancer

DRS. HAROLD C. BAILEY and HALSEY J. BAGG, New York: By means of radium, the original lesion may be eliminated completely without loss of any considerable amount of normal tissue, without sloughing and with comparatively little pain. There is a minimum opportunity for spreading the disease, especially if the insertion of the tubes is preceded by an application of heavily filtered radium, which tends to devitalize the tumor cells. Whenever possible, the radium tubes surrounding the lesion are inserted through normal tissue. If the tubes are of 5 mc. strength, the elimination of the tumor is associated with extensive sloughing and prolonged and serious discomfort; whereas the smaller dose of about 0.5 mc. accomplishes as much for the removal of the growth, and yet without sloughing and with little pain. Except in the most minute lesion, it is not possible to arrange the placing of the tubes so that all the cancer cells are effectively radiated. Filtered radium, to check further the growth of the injured or partly damaged cells, is necessary as an adjunct to the implantation of bare tubes in vulval and vaginal cancers.

Disposition of Uterus Following Salpingectomy When It Is Desirable to Preserve Menstruation

DR. CAREY CULBERTSON, Chicago: The reduction of the uterus in size by removal of its entire fundus is a ready method of disposing of the organ after salpingectomy when, particularly in young women, it is desirable to preserve menstruation. Defundation becomes a logical procedure not only in operating for the cure of infectious processes, but also for simple sterilization, for ectopic pregnancy, ovarian cystomas and like conditions. Its only contraindication from a technical point of view is that of procidentia uteri.

Dietary Factors in Causation of Sterility in Rats

DRS. EDWARD REYNOLDS and DONALD MACOMBER, Boston: A moderate decrease in the percentage of the fat-soluble vitamin, of the protein, or of the calcium contained in an otherwise excellent diet produces a definite decrease in the fertility of individual rats. A slight decrease in the fertility of both partners will produce a sterile mating. The fertility of the mating may be stated as the product of the fertility of the individuals concerned. If the index so obtained falls below a given point the mating will be sterile, and this result holds true whether the partners are of equal or of widely different fertility. These principles explain the fact that two individuals which are sterile, when mated together, may nevertheless reproduce freely when mated to new partners (of higher fertility).

Unsolved Problems in Gynecology and Obstetrics

DR. W. BLAIR BELL, Liverpool, England: The tendency to minimize the importance of biology and to urge the superior claims of hospital study is unfortunate and probably is to some extent accountable for the present position. Today elementary gynecologic anatomy and physiology are taught by the clinician and not by the anatomist and the physiologist, at any rate in Great Britain. The result is that the anatomist and the physiologist are unaware of the hiatuses in our knowledge. The man who has difficulties to face in practice, will, if properly educated, be the person most likely to overcome them. The necessary improvements in educational methods are radical. The clinician should have the right to define the subject matter of the physiologic and anatomic courses, and physiology should be taught more in coordination with clinical work. With regard to postgraduate work it seems likely that the clinical unit and units for group study will give best results.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Dermatology and Syphilology, Chicago

July, 1921, **4**, No. 1

*Ringworm of Nails. R. S. Hodges, University, Ala.—p. 1.
*Medical Photography: with Special Reference to Skin Diseases. H. Fox, New York.—p. 27.
Visceral Syphilis: Syphilis of Lung. U. J. Wile and C. H. Marshall, Ann Arbor, Mich.—p. 37.
*Case of Probable Paraffin-Oil Tumor. J. H. Stokes and A. J. Scholl, Rochester, Minn.—p. 50.
*Genesis of Neurosyphilis. J. E. Moore, Baltimore.—p. 54.
Internal Poisoning from Rhus. J. B. McNair, Washington, D. C.—p. 62.
*Sachs-Georgi Test for Syphilis. F. Parker and A. V. R. Haigh, New York.—p. 66.
Comparative Study of Syphilis in Whites and in Negroes. E. L. Zimmermann, Baltimore.—p. 75.

Ringworm of Nails.—Hodges presents a preliminary report of sixteen cases of onychomycosis with a cultural study of twelve of these cases due to trichophytons.

Medical Photography in Skin Diseases.—To obtain a collection of good medical photographs, Fox claims, it is generally necessary for the medical man to learn at least to pose the patient, and to make the exposure himself. Satisfactory medical photographs cannot be made by the average professional photographer, as he is ignorant of the exact anatomic condition which is desired to be reproduced.

Case of Probable Paraffin Oil Tumor.—In view of the probability that a considerable amount of adulterated camphorated oil has been used during the influenza epidemics of the past two years, Stokes and Scholl suggest that as much medical publicity as possible should be given to the camphorated oil tumor, as its deceptive histology and misleading clinical appearance are likely to result in the diagnosis of tuberculosis and of malignant neoplasia.

Genesis of Neurosyphilis.—In fifty-four cases of syphilis in all stages of the disease, but without demonstrable neurologic involvement, an early negative spinal puncture was repeated by Moore with positive results in two. In one of the positive cases, invasion of the central nervous system had apparently taken place by direct extension from a gummatous periostitis of the inner cranial table; in the other, it probably occurred during a second period of generalization of the disease. In the majority of cases of neurosyphilis, Moore says, invasion of the central nervous system takes place during the first few months of the infection; but in some cases it may occur at any time during the course of syphilis by one of the two mechanisms outlined. The appearance of recurrent secondary syphilis or the recurence of a positive blood Wassermann reaction after a lapse in treatment is the probable outward manifestation of a fresh generalization of the disease, and should be made the occasion for reexamination of the cerebrospinal fluid.

Sachs-Georgi Test for Syphilis.—The Sachs-Georgi reaction as observed by Parker and Haigh agreed with the Wassermann reaction in 93.07 per cent. of 520 parallel cases.

Archives of Surgery, Chicago

July, 1921, **3**, No. 1

*Anatomy and Surgery of Trigon. H. H. Young and M. B. Wesson, Baltimore.—p. 1.
*Diverticula of Urinary Bladder. W. E. Lower, Cleveland.—p. 38.
*Tumors of Bony Chest Wall. C. A. Hedblom, Rochester, Minn.—p. 56.
*Resection of Pylorus for Gastric Ulcer. K. W. Doege, Marshfield, Wis.—p. 86.
*Traumatic Spondylolisthesis; Report of Two Cases. S. Kleinberg, New York.—p. 102.
*Studies in Exhaustion: II. Exertion. G. W. Crile, Cleveland.—p. 117.
*Course of Recovery Following Trauma of Spinal Cord. S. Cobb, Boston, and C. C. Coleman, Richmond, Va.—p. 132.
*Fracture of Skull. W. P. Eagleton, Newark, N. J.—p. 140.
Cholecystitis. R. R. Graham, Toronto.—p. 154.
Clinical Value of Certain Bacteriostatic Triphenylmethane Derivatives. C. C. Berwick, San Francisco.—p. 168.
Fifteenth Report of Progress in Orthopedic Surgery. R. B. Osgood, R. Soutter, H. C. Low, M. S. Danforth, C. H. Bucholz, L. T. Brown and P. D. Wilson, Boston.—p. 181.

Anatomy and Surgery of Trigon.—The review made by Young and Wesson shows that the trigonal muscle is a definite entity, continuous with the longitudinal muscle fibers of the ureters, and is superimposed on the muscles of the bladder wall. The opening of the vesical orifice during urination is not an inhibitory action, but is primarily the result of the contraction of the powerful trigonal muscle which passes in the form of an arc through the weaker arcuate muscles at the vesical orifice (the vesical "sphincter"), and pulls them open mechanically on contraction. When the trigon is removed, micturition is difficult and incomplete; with removal of one half of the trigon, the remaining half functions and the bladder can be entirely be emptied. The same is true when the trigon is split. A split trigon is not functionally so perfect as one with Mercier's bar intact. According to pharmacologic tests, nerve ganglions and true sympathetic fibers are present in the trigonal muscle, while the bladder wall has sympathetic and parasympathetic fibers. The trigon is distorted in cases of renal tuberculosis, the shortened tuberculous ureter drawing the ureteral ridge outward on the bladder wall. It may cause invagination of the ureteral margin and elevation of the trigon on that side, the bladder wall being depressed about it. If adhesions are present between the diaphragm and kidney, the shortened tuberculous ureter with respiration causes the trigonal ridge to play back and forth like a piston rod in the invaginated ureteral orifice. There is a compensatory hypertrophy of the trigon in cases of obstruction at the vesical orifice, due to overexercise of the trigonal muscle in opening the vesical orifice. A corresponding atrophy follows the removal of the obstruction. The force from the contraction of the trigonal muscle dissected partly free from the bladder wall, irrespective of the amount of hypertrophy, is not properly applied to help in the opening of the vesical orifice. The contraction of a hypertrophied trigon, dissected free from the bladder wall, tends to form a damlike ledge dividing the bladder into two parts. A diverticulum may form beneath the undermined trigon. The obstruction due to a hypertrophied trigon can be removed: (1) intra-urethrally by means of a punch or a trigonotome; (2) perineally, by means of a scalpel or trigonotome; (3) suprapubically, by the use of scalpel and scissors.

Diverticula of Urinary Bladder.—Lower agrees with Watson that there is a congenital predisposition to bladder diverticula, but that "their clinical recognition during adult life is hastened and their dimensions greatly increased by any of the factors that would bring about increased vesical distention or increased activity of the bladder musculature." The fact that diverticula usually occur in patients past middle age and almost invariably in the male, with the concomitant presence of obstruction, seems to confirm such a theory. With the congenital weakness of the bladder wall aggravated by pressure, due to obstruction of the urinary outlet, it is evident that diverticula may readily form; as also in cases in which an overdistended condition of the bladder is due to failure to empty it at regular intervals. Two rather striking examples of diverticula, apparently due to the latter condition, have come under Lower's observation. Both patients were mail carriers, and each stated that he attributed his difficulty to the fact that on the mail route it was not always convenient to empty the bladder and that, therefore, he had held his urine much longer than under ordinary conditions. An analogous pathologic condition, due to a congenital defect, is diverticulum of the esophagus.

Tumors of Bony Chest Wall.—Tumors of the bony chest wall are relatively rare. Hedblom analyzes 213 cases (61.4 per cent. sarcoma and 18.7 per cent. chondroma). The ribs were primarily involved in 78.7 per cent., and the sternum in 21.3 per cent. Trauma seems to be etiologic in some cases, both with regard to incidence and to malignant degeneration of the benign forms. Pain is the most characteristic symptom and may be present in the case of a benign as well as of a malignant tumor. Pain may be present before the tumor is recognized. Early differential diagnosis of neoplasm and cold abscess, exostosis, aneurysm, and dermoid cyst may be difficult. Preoperative differentiation of a benign or a malignant neoplasm may be impossible. Early radical extirpation offers the best prospect of prolonging life and of cure. Late radical

or palliative extirpation, even in the presence of extensive involvement, may result in a relatively long period of freedom from recurrence. Early thoracotomy is indicated in any doubtful case. Differential pressure anesthesia, while not essential to the successful removal of tumors involving wide opening of the pleural cavity, obviates the risk incident to sudden open pneumothorax, and by preventing a closed pneumothorax may lessen materially the occurrence of postoperative shock, pneumonia, and empyema. Intratracheal or intrapharyngeal insufflation anesthesia affords an effective means of preventing operative pneumothorax. Shock, pneumonia, and empyema are the common causes of postoperative deaths. Recurrence has been the rule in most cases of malignant tumor; but there may be freedom from recurrence for many years and life may be further prolonged by repeated extirpation of the growth.

Resection of Pylorus for Gastric Ulcer.—In nine cases reported by Doege the operations performed were: seven Billroth II, one sleeve resection of the pyloric antrum and one Polya operation. All patients were completely satisfied with the result of their operations and had good health. Doege feels that the cure of chronic gastric ulcer by gastroenterostomy alone is doubtful. Gastro-enterostomy gives the best results in ulcers near the pylorus accompanied by pyloric stenosis. Only temporary benefit can be hoped for after gastro-enterostomy in ulcers which are distant from the pylorus. Pylorectomy with posterior gastro-enterostomy fulfils the principle requirement for the cure of gastric ulcer, i. e., removal of acidity, better than any other operation.

Two Cases of Traumatic Spondylolisthesis.—In one of Kleinberg's cases the cause was a beam striking the patient on the back of the neck and throwing him to the ground, resulting in rupture of the lumbosacral ligaments and forward subluxation of the fifth lumbar vertebra. In the second case, the patient, while carrying a weight on his right shoulder, had another weight thrown onto his shoulder when he did not expect it. This caused him suddenly to "cave in." He felt a severe pain in the back at the time; but did not fall to the ground. He caught himself just as he got to the ground and straightened up. The pain in the back continued to annoy him; but he was able to work until the end of the day, which was two hours after his injury. This patient became aware of the hollow in the lower part of the back soon after the injury.

Studies in Exhaustion.—Crile investigated combined exertion and fear in red foxes, combined exertion and anger in dogs, combined exertion and anger in cats, prolonged exertion in rats and salmon, and the discharge of electric mechanism in electric fish (narceine brasiliensis). It was evident that extreme physical exertion in various land animals and in fish causes demonstrable histologic lesions in the central nervous system, the liver and the suprarenals, these changes being least marked in the liver. These histologic changes are identical in character with those described as due to prolonged insomnia. Chemical studies made after animals had been subjected to extreme exertion show an increased iodin content of the thyroid, and slightly increased glycogen content in the liver; a diminished glycogen content in the muscles; greatly diminished epinephrin content and a diminished epinephrin activity. The hydrogen-ion concentration of the blood and of the urine is increased by extreme exertion. The clinical effects of exertion as immediately manifested in increased temperature, pulse and respiration, and later in acute or chronic exhaustion are self-evident.

Recovery Following Trauma of Spinal Cord.—The histories of twenty patients with spinal cord injury from bullet and shrapnel wounds were analyzed by Cobb and Coleman. One of the most important questions raised by this study is whether or not the late results would be better if early operation were performed. This study shows that it is often impossible to classify spinal cord injuries clinically with reference to the extent of the cord destruction, and many cases which at first are regarded as hopeless may require regrouping later, because of the appearance of signs indicating a resumption of cord function. Recovery of function in such cases may progress to an almost complete restoration. In view of the difficulty of determining early which cases have a complete anatomic transsection and which have edema, hemorrhage, and compression superimposed on an incomplete lesion, it does not seem justifiable to delay operation in all cases in which there appears to be a complete physiologic interruption. If an operation is withheld until some signs of recovery of cord function appear, additional damage to the cord may result. The residuals, then, could be attributed in part to the failure to offset the pressure effects by early decompression. Thus it seems to Cobb and Coleman that the conservatism advocated by some in the treatment of severe cord injuries should be modified. If the patient's general condition justifies an operation, an effort should be made to reduce or prevent the later disabilities by prompt exploration of the injured cord provided a reasonable doubt exists as to whether or not the cord is completely divided.

Fracture of Skull.—The importance of the early diagnosis and operative treatment of fracture of the skull is dwelt on by Eagleton, and he shows a chart of clinical classification and treatment, and guide for detailed neurologic examination.

Boston Medical and Surgical Journal

June 30, 1921, **184**, No. 26

Mechanical Explanation of Suffering Which is Associated with Prolapse of Uterus. G. M. Garland, Boston.—p. 689.
Sargent Body-Test. G. V. N. Dearborn, Cambridge, Mass.—p. 691.
Goiter. J. Stanton, Boston.—p. 693.
The A B C of Radium. E. M. Deland, Boston.—p. 696.

July 7, 1921, **185**, No. 1

*Diagnostic Pitfalls. Late Effects of Gassing vs. Tuberculosis. J. B. Hawes, Boston.—p. 1.
Postoperative Treatment of Urinary Lithiasis. E. L. Young, Boston. —p. 4.
Cancer Question: R. S. V. P. S. W. Little, Rochester, N. Y.—p. 9.
*Symptoms and Treatment of Acute Cardiac Failure. Report of Case. T. J. O'Brien, Boston.—p. 15.
Vesico-Intestinal Fistula: Report of Case: End-Results. F. F. Doggett, Boston.—p. 22.
Prolapse of Uterus During Pregnancy. G. M. Garland, Boston.—p. 25.
Weight Prediction by Formulas of Bornhardt, Von Pirquet and Dreyer. H. Gray and H. F. Root, Boston.—p. 28.

Gassing and Tuberculosis.—The points to be remembered in differentiating pulmonary tuberculosis from the effects of gassing Hawes says are: Do not take it for granted that a given process is tuberculous, even with a suggestive roentgenogram. Do not do the reverse. A general appearance of robust health, with marked symptoms, is against tuberculosis. The lung complications resulting from gas are usually basal and not apical processes, and the usual signs found are those of a thickened pleura and often a localized bronchitis. Further, following gassing, there is apt to be a marked increase in nervous symptoms of every kind. Do not take it for granted that these men who have been gassed are not sick and do not need treatment, even if you decide that they do not have tuberculosis or, indeed, not much wrong with their lungs in any way. Treat the man who has been gassed and not his lungs.

Treatment of Cardiac Failure.—In cases of acute heart failure, when the patient must be helped within from three to five minutes, O'Brien says strophanthin, in maximum dose, is indicated, given intravenously. In cases not so acute, digitalis leaf, in maximum dose, by mouth, is indicated, with exceptions, and with care to have a dependable digitalis.

Colorado Medicine, Denver

June, 1921, **18**, No. 6

Evolution of Steinach's Theory of Sex Determination and Rejuvenation. Z. von Dworzak, Denver.—p. 122.
Best Papers for Scientific Meeting. E. Jackson, Denver.—p. 126.
Certain Aspects of Gastro-Intestinal Dyspepsia Suggested by More Recent Methods of Study. T. R. Love and W. S. Dennis, Denver. —p. 128.
Complement Fixation in Tuberculosis. H. Gauss and O. B. Rensch, Denver.—p. 132.

Illinois Medical Journal, Oak Park

June, 1921, **39**, No. 6

Pneumococcus Peritonitis. V. F. Marshall, Appleton, Wis.—p. 481.
Abscess of Lung. C. Molz, Murphysboro.—p. 484.
Cancer of Pancreas: Postmortem Report. J. D. Hayward, St. Louis. p. 484.
Local Anesthesia in Abdominal Surgery. C. A. Stevens, Chicago.—p. 486.

Basal Metabolism and General Practitioner. J. H. Hutton, Chicago. p. 489.
Is Progress Being Made in Controlling Venereal Disease? C. C. Pierce, Washington, D. C.—p. 492.
Intravenous Chemotherapy. M. W. Harrison, Collinsville.—p. 498.
Comitment and Care of Insane. H. J. Gahagan, Chicago.—p. 500.
Saunders and Rosenow Theories of Acute Poliomyelitis. J. Zahorsky, St. Louis.—p. 506.
Outlook for Fourth Era Surgery. R. T. Morris, New York.—p. 508.
Surgical Treatment of Intracranial Infections. E. Sachs, St. Louis. —p. 510.
Industrial Ophthalmology. M. B. Wilson, Chicago.—p. 513.
Treatment of Chronic Arthritis with Special Reference to End Results. W. L. Bierring, Des Moines, Ia.—p. 517.
Clinical Study of One Thousand Cases of Scopolamin-Morphin Anesthesia. M. Thorek, Chicago.—p. 520.
Diagnosis of Nasal Accessory Sinus Disease. H. C. Ballenger, Chicago. —p. 525.
Treatment of Paranasal Sinus Diseases in Relation to Secondary Infections from This Source. C. J. Swan, Evanston.—p. 527.
Tonsils as Foci for Systemic Infection. G. E. Shambaugh, Chicago.—p. 531.
Relations of Endocrine Stimulation and Sympathetic Stimulation. A. E. Lund, Chicago.—p. 535.
Foci in Oral Cavity. H. A. Potts, Chicago.—p. 542.
Earache in Its Clinical Significance. M. F. Arbuckle, St. Louis.—p. 547.
Ear as Source of Focal Infection. G. W. Boot, Chicago.—p. 549.
Study in Contract Practice in Chicago. T. P. Foley, Chicago.—p. 550.

Journal of Infectious Diseases, Chicago

July, 1921, **29**, No. 1

Ionization Constants of Glycerophosphoric Acid and Their Use As Buffers, Especially in Culture Mediums. R. R. Mellon, S. F. Acree, P. M. Avery and E. A. Slagle, Rochester, N. Y.—p. 1.
Stable Single Buffer Solution: P_H1 to P_H12. S. F. Acree, R. R. Mellon, P. M. Avery and E. A. Slagle, Rochester, N. Y.—p. 7.
Gonococcus Types. J. Hermanies, Cincinnati.—p. 11.
Change in Hydrogen-Ion Concentration of Various Mediums During Heating in Soft and Pyrex Glass Tubes. J. R. Esty and P. H. Cathcart, Washington, D. C.—p. 29.
*Changes in Alkali Reserve, Sugar Concentration, of Blood and Leukocytes in Experimental Infections. E. F. Hirsch, Chicago.—p. 40.
*Bacteriologic Studies of Upper Respiratory Passages: I. Hemolytic Streptococci of Adenoids. I. Pilot and S. J. Pearlman, Chicago.—p. 47.
*Id. II. Pneumococci and Nonhemolytic Streptococci of Adenoids and Tonsils. I. Pilot and S. J. Pearlman, Chicago.—p. 51.
*Id. III. Influenza Bacilli (Pfeiffer) of Adenoids and Tonsils. I. Pilot and S. J. Pearlman, Chicago.—p. 55.
*Id. IV. Incidence of Pneumococci, Hemolytic Streptococci and Influenza Bacilli (Pfeiffer) in Nasopharynx of Tonsillectomized and Non-tonsillectomized Children. J. Meyer, I. Pilot and S. J. Pearlman, Chicago.—p. 59.
*Id. V. Diphtheria Bacilli and Diphtheroids of Adenoids and Tonsils. I. Pilot, Chicago.—p. 62.
Trehalose Fermentation in Differentiation of Paratyphoid-Enteritidis Group. S. A. Koser, Washington, D. C.—p. 67.
Production of Hydrocyanic Acid by Bacillus Pyocyaneus. F. A. Patty, Lawrence, Kan.—p. 73.
Microscopic Method for Anaerobic Cultivation. A. Itano and J. Neill, Amherst, Mass.—p. 78.
Production of Carbon Dioxid by Typhoid Bacillus and Mechanism of Russell Double Sugar Tube. H. J. Nichols, Washington, D. C.—p. 82.
Effects of Filtration of Potencies of Antitoxins. W. N. Berg, Washington, D. C.—p. 86.
*Spread and Persistence of Hemolytic Streptococci Peculiar to Scarlet Fever. R. Tunnicliff, Chicago.—p. 91.
*Recovery from Rabies: Cases of Treatment Paralysis and Recovery of Animals Apparently Rabid. J. M. Phillips, F. Berry and J. H. Snook, Columbus, Ohio.—p. 97.

Alkali Reserve, Sugar Concentration, and Leukocytes of Blood in Experimental Infections.—Hirsch states that depression of the alkali reserve of the blood in rabbits by intravenous injections of pathogenic bacteria is accompanied by a transient hyperglycemia, the degree of hyperglycemia apparently depending on the extent of alkali reserve diminution. Subcutaneous administration of carbonate or bicarbonate solutions does not prevent the acidosis produced by these injections of bacteria. Injections of acid potassium phosphate solutions depress the alkali reserve of the blood, this lowered alkalinity being associated with a hyperglycemia and by changes in the number of leukocytes similar to those following injections of bacteria. The concentration of sugar in the blood seems to be independent of the changes in the number of leukocytes.

Hemolytic Streptococci of Adenoids.—Cultures were made by Pilot and Pearlman from the adenoids of 103 children who presented adenoids and tonsils of varying degrees of hyperplasia with no evidence of any recent acute inflammation, fever or subjective symptoms of sore throat. From nasopharyngeal swabs and the surface of the adenoids, hemolytic streptococci were recovered in 55 per cent.; from the depths between the folds and of the cryptlike depressions of the adenoids of the same persons, in 61 per cent. in larger numbers. The excised tonsils of the same patients revealed hemolytic streptococci in still larger numbers in 95 per cent. These streptococci agree in their morphology, cultural characteristics, fermentation reactions and pathogenicity, and are practically identical with hemolytic streptococci from various human sources. The authors emphasize that the adenoids, like the tonsils, are to be considered as common foci harboring hemolytic streptococci.

Pneumococci and Nonhemolytic Streptococci of Adenoids and Tonsils.—To ascertain more accurately the incidence of pneumococci in the throat and nasopharynx, cultures were made by Pilot and Pearlman from extirpated adenoids and tonsils. In a series of 103 adenoids, pneumococcus occurred in 65 per cent., 2 per cent. of which were Type II, 13 per cent. Type III and 85 per cent. Type IV. In the nasopharyngeal swabs of 21 persons the pneumococcus was recovered in 71.4 per cent.; from the tonsils of the same persons in 66.6 per cent., and the adenoids in 71.4 per cent. It was observed that in the depths of the folds and the crypt-like depressions of the nasopharyngeal vegetations and from the tonsillar crypts the pneumococci were decidedly more numerous than the swabs. In four instances the pneumococci occurred practically in pure cultures from the adenoids. *Streptococcus viridans* was found in 89 per cent. of the adenoids and 81 per cent. of the tonsils. *Streptococcus mucosus* was encountered in 3 per cent. of the adenoids, and indifferent streptococci in 12 per cent. The Mathers coccus was noted in 17 per cent. of the adenoids, once in pure culture. The adenoids and tonsils are foci in which pneumococci and nonhemolytic streptococci commonly flourish.

Influenza Bacilli of Adenoids and Tonsils.—Gram-negative, pleomorphic, hemoglobinophilic bacilli, showing a preference for heated blood agar and revealing the characteristic property of symbiosis, were isolated by Pilot and Pearlman and identified in 40.9 per cent. of extirpated adenoids and in 53.9 per cent. of the excised tonsils from 115 persons. In the nasopharynx they were present in 40 per cent. of 25 persons and in fewer numbers. The tonsils and adenoids therefore are foci in which influenza bacilli (Pfeiffer) commonly flourish.

Pneumococci, Hemolytic Streptococci and Influenza Bacilli in Nasopharynx.—Pneumococci, hemolytic streptococci and *B. influenzae* were often found in the nasopharynx of normal children, but the incidence and numbers of hemolytic streptococci and influenza bacilli in the nasopharynx is decidedly less in the children whose adenoids and tonsils had been removed. In case of the pneumococcus, the numbers are less in the same children than in those whose tonsils were present. The removal of tonsils and adenoids reduces the number of certain bacteria in the oropharynx and nasopharynx, but does not cause their disappearance.

Diphtheria Bacilli and Diphtheroids of Adenoids and Tonsil.—Cultures made by Pilot of the excised adenoids of 100 children revealed *B. diphtheriae* in 12. The cypts of the extirpated faucial tonsils of the same persons harbored the bacilli in 12. When present in the tonsils the bacilli also occurred in the adenoids of the same person. In the tonsillar crypts the diphtheria bacilli were usually more numerous than in the adenoids. Two of the twelve strains were virulent; one showed attenuated virulence; three were pathogenic in large doses of the first culture while subsequent cultures were without virulence; remainder were totally avirulent. Diphtheroids occurred in thirty of the adenoids and in seventeen of the tonsils; when present in both they were decidedly more numerous in the naso-pharyngeal vegetations than in the tonsillar crypts.

Spread of Hemolytic Streptococci in Scarlet Fever.—Tunnicliff states that hemolytic streptococci may be isolated from the floor and walls of rooms occupied by patients with scarlet fever and diphtheria, and from the fingernails, face masks and shoes of the attending nurses and from the eating utensils used by patients harboring hemolytic streptococci. Only five of twenty strains thus isolated were opsonified and agglutinated by the serum of a sheep immunized with

a hemolytic streptococcus from scarlet fever and hence to be considered as specific for scarlet fever. Four of these strains were isolated from the eating utensils of scarlet fever patients and one from the face mask of the nurse in attendance. These results indicate the value of face masks and the necessity of disinfection of eating utensils used by patients with infectious diseases. It would appear also that persons associated with scarlet fever patients may develop tonsillitis without an exanthem and harbor hemolytic streptococci which belong to the same biologic group as those isolated from typical cases of scarlet fever. Agglutination of hemolytic streptococci from suspected cases of scarlet fever, by immune sheep serum specific for streptococci from scarlet fever, has proved helpful in diagnosis. These results suggest, further, that while patients with scarlet fever generally rid themselves of hemolytic streptococci specific for scarlet fever in from three to four weeks, patients with discharges may retain them much longer, and that the streptococcus specific for scarlet fever disappears at the time when the patient becomes noninfectious, according to clinical experience.

Spontaneous Recovery from Rabies.—The cases seen by Phillips, Berry and Snook show that spontaneous recovery from rabies naturally acquired, while rare, does occur. The saliva of an animal which recovers from rabies may have been extremely virulent during the course of the disease. As early as thirty-eight days after recovery from rabies in a dog, the infectivity of the brain may disappear and Negri bodies be absent. Therapeutic measures to control the symptoms in developed rabies in man should not be so herioc as to themselves endanger the life of the patient, for there is a possibility of recovery.

Journal of Medical Research Boston

March-May, 1921, **41**, No. 3

*Investigation of Virus of Measles. A. W. Sellards and G. H. Bigelow, Boston.—p. 241.
*Nature of Action of Nonspecific Protein in Disease Processes: II. Horse Serum and Soluble Toxin. D. M. Cowie and R. M. Greenthal, Ann Arbor, Mich.—p. 261.
Precipitins in Bloodserum of Arthropods. L. Loeb, St. Louis.—p. 269.
Specific Adaptation Between Body Fluids and Blood Cells in Invertebrates. L. Loeb, St. Louis.—p. 277.
Pigmentation of Heart Muscle. D. H. Dolley and F. V. Guthrie, Columbia, Mo.—p. 289.

Virus of Measles.—A small pleomorphic Gram-staining bacillus was recovered by Sellards and Bigelow in blood culture from measles patients. It was found in twenty-five of thirty-one cases using methods for the inhibition of phagocytosis in the cultures. It was sometimes found in considerable numbers, growth occurring in one instance from the inoculation of 0.01 c.c. of blood. Similar cultures in twenty-four control individuals resulted in growth in five cases. In their morphology and staining reactions, these control cultures resembled closely the strains from measles cases. Fermentation tests showed that at least three of the cultures from control cases were definitely different from the majority of the measles strains. The majority of the measles strains fermented glucose, dextrin, and in some instances saccharose. Three of the five cultures from control cases failed even to ferment glucose. A few of the strains from measles cases failed to ferment glucose and are therefore regarded as distinct from the majority of the measles strains. Three monkeys were inoculated with strains from measles cases. In two the symptoms were vague, consisting only of a diffuse erythema and isolated papules. In one, however, a suggestive cluster of macules and papules developed, some of which became petechial. Histologically, these lesions conformed to the description of the human lesions. This animal was tested by a reinoculation of the same organism and no symptoms developed.

Nonspecific Protein in Horse Serum and Soluble Toxin.—Cowie and Greenthal found that 1 c.c. of normal horse serum when injected subcutaneously or intravenously into guinea-pigs simultaneously with diphtheria toxin will always protect against a fatal dose and may protect against as high as eight fatal doses of the toxin. Larger doses of normal horse serum protect against larger doses of diphtheria toxin but the effect is necessarily proportional. The highest protection that is recorded in the present investigation is against 15 M. L. D. with 3 c.c. of horse serum. The protecting power of normal horse serum resides in the protein portion and not in the alcoholic soluble portion. The protein portion of 1 c.c. of horse serum always protects against a fatal dose of toxin. There seems to be evidence that the protecting power of the horse serum used was not entirely due to the presence of diphtheria antitoxin in the serum.

Medical Record, New York

July 2, 1921, **100**, No. 1

Biologic Cause of Metabolism and Metabolic Diseases. F. B. Turck, New York.—p. 1.
Some Mouth and Jaw Conditions Responsible for Defects in Speech. J. S. Greene, New York.—p. 8.
Sea Bathing and the Ear. A. Rovinsky, New York.—p. 13.
Food Combination. T. J. Allen, Eureka Springs, Ark.—p. 14.
*Automatic Gravity Anesthetizer. A. L. Soresi, New York.—p. 16.
Large Doses of Bacterial Vaccine in Gonorrheal Arthritis. H. W. Lyding, New York.—p. 18.

Automatic Gravity Anesthetizer.—Soresi's automatic gravity anesthetizer is said to deliver the anesthetic to the mask by gravity in any amount and combination desired, that can vary from a continuous abundant stream, to one or more drops per minute. The amount can be increased or decreased at will, or can be kept stationary for any length of time or stopped completely by simply turning a small knob. The apparatus will functionate with perfect satisfaction under all circumstances; climate, temperature, altitude position of the patient, will not hamper the perfect work of the apparatus, because its construction is so simple that there is nothing to get out of order. It can be clamped to any table or bed, put at any height, and—by means of a ball-and-socket arrangement of its support—bent to any angle; so that the anesthetic is carried to the mask by the force of gravity which, naturally, is absolutely constant under all circumstances. The apparatus consists of a metal cylinder lined with glass of about 250 c.c. capacity containing the anesthetic; a little chamber through which the anesthetic drops; a tube that carries the anesthetic to the mask; the whole apparatus is attached to the operating table or bed by a support which can be raised or lowered and bent to any desired angle.

July 9, 1921, **100**, No. 2

Treatment of Some Fractures of Long Bones, Including Some Fractures of Pelvis. E. H. Smith, San Francisco.—p. 47.
Acute Septic Peritonitis. J. A. MacLeod, Buffalo.—p. 52.
Laryngopulmonary Tuberculosis. J. Dworetzky, Liberty, N. Y.—p. 57.
Prostatic Obstruction. P. E. Truesdale, Fall River, Mass.—p. 63.
Relationship of Pelvic Disorders to Those of Adjacent Viscera. J. W. Nixon, Jr., San Antonio, Tex.—p. 65.
Case of Epidemic Meningitis Treatment by Combined Serum and Vaccine Therapy. C. E. Nammack, New York.—p. 67.

Neurological Bulletin, New York

May, 1921, **3**, No. 5

Anatomical and Clinical Syndromes of Corpus Striatum. J. Lhermitte.—p. 163.
*Clinical Phenomena of Decerebrate Rigidity. O. S. Strong, New York.—p. 183.

Clinical Phenomena of Decerebrate Rigidity.—Strong reports a case exhibiting some of the symptoms of the conditions as described by Wilson as well as certain peculiarities of associated movements.

New York State Journal of Medicine, New York

June, 1921, **21**, No. 6

Future of Medicine in America. L. F. Barker, Baltimore.—p. 189.

Ohio State Medical Journal, Columbus

June 1, 1921, **17**, No. 6

Special Field of Neurological Surgery after Another Interval. H. Cushing, Boston.—p. 373.
Conjunctivitis Blennoroica. F. A. Grafe, Cincinnati.—p. 380.
Nasal Deformities of Developmental Type. M. Metzenbaum, Cleveland.—p. 382.
Correction of Nasal Deformities with Autogenous Transplants. J. Stotter and A. L. Stotter, Cleveland.—p. 384.
Future of Industrial Medicine in Labor Policy. O. P. Geier, Cincinnati.—p. 386.
Primary and Secondary Nitrous Oxid Saturation for Relaxation and As Test of Patient's Capacity for Operation. E. I. McKesson, Toledo.—p. 390.

Ovarian Dermoid Cysts. B. R. McClellan, Xenia.—p. 397.
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Sarcoma of Kidney; Report of Case. M. A. Tate, Cincinnati.—p. 405.

Oklahoma State Medical Ass'n Journal, Muskogee

June, 1921, **14**, No. 6

Present Status of Oklahoma Physician. G. A. Boyle, Enid.—p. 130.
Service and Efficiency. L. M. Westfall, Oklahoma City.—p. 133.
Diagnosis and Treatment of Essential Vascular Hypertension. R. M. Balyeat, Oklahoma City.—p. 134.
Importance of Treatment of Injuries and Other Minor Surgical Conditions. P. P. Nesbitt, Muskogee.—p. 137.
Care of Newborn. W. M. Taylor, Oklahoma City.—p. 138.

Pennsylvania Medical Journal, Harrisburg

June, 1921, **24**, No. 9

Heredity as an Element in Bacterial Diseases. R. A. Keilty, Danville.—p. 609.
Bone Necrosis with Special Reference to Tubercular Lesion. M. W. Reed, Bellefonte.—p. 614.
Use of Thomas Splint in Fractures of Femur. D. A. Webb, Scranton.—p. 617.
Traumatic Paralysis of Left Superior Oblique Muscle, Relieved by Tenotomy of Right Inferior Rectus. E. A. Shumway, Philadelphia.—p. 623.
Muscular Advancement Operation. W. C. Posey, Philadelphia.—p. 627.
Antiscorbutic Vitamin. M. H. Givens, Pittsburgh.—p. 629.
Pyloric Stenosis; Report of Fifty Cases. H. C. Deaver, Philadelphia.—p. 632.
Mechanical Influences in Sciatica. E. W. Fiske, Pittsburgh.—p. 638.

Public Health Journal, Toronto

May, 1921, **12**, No. 5

Ontario Municipal Health Efforts. R. Wodehouse.—p. 193.
Public Aspect of Tuberculosis. F. Royer.—p. 213.
Membership Enrolment Campaign of Canadian Red Cross Society; Crusade for Good Health. A. H. Abbott.—p. 225.

South Carolina Medical Ass'n Journal, Greenville

May, 1921, **17**, No. 5

Nohyperplastic Toxic Goiter. A. E. Baker, Charleston.—p. 108.
Abscess of Posterior Mediastinum; Case Report. J. R. Young, Anderson.—p. 111.
Treatment of Eclamptogenic Toxemia of Pregnancy; Surgical Aspects. L. Peters, Columbia.—p. 116.

Surgery, Gynecology and Obstetrics, Chicago

July, 1921, **33**, No. 1

*Habitual or Recurrent Dislocation of Shoulder. M. S. Henderson, Rochester, Minn.—p. 1.
Arthroplasty of Jaw. J. M. Neff, Chicago.—p. 8.
*Focal Infection and Elective Localization of Bacteria in Appendicitis, Ulcer of Stomach, Cholecystitis and Pancreatitis. E. C. Rosenow, Rochester, Minn.—p. 19.
Value of Local Anaesthesia in Surgery of Today. W. Bartlett, St. Louis.—p. 27.
*Acute Partial Enterocele. C. F. Sawyer, Chicago.—p. 38.
Comparative Study of End-Results of Cholecystostomy and Cholecystectomy. F. D. Moore, Chicago.—p. 41.
Results in Open Treatment of Fractures. J. F. Smith, Wausau, Wis.—p. 45.
*Primary Scleroma of Larynx in a Negro Born in Maryland. S. S. Watkins, Louisville, Ky.—p. 47.
Supports of Uterus. A. J. Nyulasy, Perth, Australia.—p. 53.
*Adenomyoma of Fallopian Tube. A. E. Mahle, Rochester, Minn.—p. 57.
*Successful End-to-End Suture of Common Carotid Artery in Man. H. G. Sloan, Cleveland.—p. 62.
*Abdominal Pregnancy with Living Child. E. C. Moore, Los Angeles.—p. 65.
Weak Spot in American Surgery. T. S. Cullen, Baltimore.—p. 67.
Brain Abscess Following Frontal Sinusitis. W. O. Ott, Rochester, Minn.—p. 72.
Nitrous-Oxid-Oxygen Analgesia in Major Operations. G. W. Crile, Cleveland.—p. 74.
Tuberculous Ulcer of Anterior Vaginal Wall with Resection of Ulcer. E. K. Cullen, Detroit.—p. 76.
*Method of Cranioplasty. M. Ballin, Detroit.—p. 79.

Operation for Dislocation of Shoulder.—Capsulorrhaphy to strengthen the shoulder gave 50 per cent. cures in the sixteen cases of habitual or recurrent dislocation of the shoulder reported on by Henderson. Five of the patients (31.25 per cent.) are so decidedly improved that they are more than satisfied with the operation. This percentage of improvement and the percentage of cures give good results in 81.25 per cent. Henderson thinks it is probable that muscle pull or possible relaxation of the shoulder capsule above has not been sufficiently considered in the treatment. He suggests therefore, that the pectoralis major, teres major, and latissimus dorsi be lengthened, and, if thought necessary, the region of the capsule where the supraspinatus and infraspinatus are inserted and the anterior and inferior portion of the capsule be reefed.

Focal Infection and Appendicitis, Etc.—The demonstration that the foci of infection in tonsils and teeth, so commonly noted in patients with ulcer of the stomach, cholecystitis, pancreatitis, or appendicitis, contain bacteria which reproduce these respective diseases in animals, Rosenow says, suggests strongly that such foci must be important factors in the production of these conditions in man. In fact he believes that the conclusion that streptococci are the chief cause of ulcer of the stomach, cholecystitis, and appendicitis, and, probably, pancreatitis, seems to be justified.

Acute Partial Enterocele.—Sawyer's patient had been operated on for acute suppurative appendicitis. The wound healed after prolonged drainage, leaving a protrusion at the site of the scar. This bulging varied in size when straining, etc., and was never tender or painful. Five years after the operation, he was seized with sudden severe pains referred to epigastrium. Pain was excruciating and there was general abdominal tenderness with localization in a protruding mass in the old scar. He presented the typical picture of strangulation of a very severe character and was sent at once to the operating room. A good sized sac was opened containing dark bloody fluid and a mass of omentum adherent in places to the sac wall. At the neck of the sac, at the side of the small base of this omental mass, there protruded a very dark, plum-colored bud of intestine. When released this was found to be ileum and the constriction had involved about one-half of its circumference. The bowel was not resected, but was placed in the abdomen beneath the incision, with a cigaret drain beside it. The patient made a very good recovery.

Primary Scleroma of Larynx.—Only two cases of primary scleroma of larynx have been encountered in one and a half million patients treated in the wards and outpatient department of the Johns Hopkins Hospital during the past thirty years; one was an immigrant who had been treated in Berlin before coming to America; the other, recorded in this paper, is the first case observed in a native of the United States. The patient was a negro, born in Baltimore, who had not been out of this country, except to the West Indies and Central American countries, where he went as a fireman on a ship that plied between Baltimore and southern ports.

Adenomyoma of Fallopian Tube.—Twenty-three cases of adenomyoma of the fallopian tube reported by Mahle were seen in the Mayo Clinic between January, 1910, and July, 1920. During this time 4, 189 fibromyomatous uteri were removed, of which 332 (7.9 per cent.) contained adenomyomas. In fourteen (60.8 per cent.) of the twenty-three they were able to trace a direct origin from mature tubal epithelium. In six cases, adenomyomas and tuberculous granulation tissue in the tube lumen could be traced in to the tube wall surrounding the adenomatous structures. In three cases no direct continuation from the tubal mucosa could be demonstrated, but serial sections through the entire tube on the uterine side showed the absence of any gland structure. From this it is concluded that the origin is most probably from the tubal mucosa.

Suture of Carotid Artery.—During an operation on the neck for recurrence of a carcinoma of the lip the common carotid was nicked. Before the bleeding was controlled by finger compression above and below the bleeding, the vessel wall was badly damaged by hemostats for about three-fourths of a centimeter, the damaged portion encroaching on about half of its circumference. The damaged area of the vessel was excised and an end-to-end anastomosis made. During the operation the circulation was cut off from the right side of the brain for thirty minutes; but on completion of the operation, pulsation was felt in the temporal artery on the side of the sutured carotid. The second day after the operation the pulsation in the right temporal artery was of about half the volume of that of the opposite side. However, on the third day, the pulsation on the two sides was of equal volume, and has so continued ever since.

Abdominal Pregnancy with Living Child.—Moore reports the case of a woman who six weeks after becoming pregnant began to have severe cramplike pains in the lower abdomen. These pains came and went for about two weeks, when she was seized with excruciating pains in the lower abdomen, pronounced on the right side. She felt very faint and had to vomit. Her attending physician advised an operation at this time. She remained in bed for ten days, occasionally having a great deal of pain, which gradually became less severe. Quite frequently between the second and third months there was a slight bloody vaginal discharge. During the sixth month of pregnancy she had very little pain, but from that time on she vomited a great deal and the fetal movements caused much pain. At about the end of the eighth month Moore operated. He found the omentum and small intestine adherent to the anterior abdominal wall, which, after separating showed a large mass covered by small intestine and with lymph. The mass had the appearance of a twisted pedicle cyst. The cyst was about the size of a three months' pregnancy and was pushed to the left by this mass. The mass was attached to the posterior surface of the right broad ligament and to the lateral pelvic wall and also extended up toward the liver, being attached to the omentum in this region. The colon was free from any attachment. The cord from the placenta extended to the left up under the spleen where the child was found free among the intestines, not surrounded by any sac. The entire broad ligament with placenta was removed en masse. The child weighed 5 pounds and 9 ounces and had no deformities. Both mother and baby are alive.

Cranioplasty.—Ballin uses as a graft one-half the thickness of the body part of a rib.

Texas State Journal of Medicine, Fort Worth

June, 1921, **17**, No. 2

Manhood of Medicine. I. C. Chase, Fort Worth.—p. 60.
Citizen and Public Health. M. M. Carrick, Austin.—p. 65.

West Virginia Medical Journal, Huntington

May, 1921, **15**, No. 11

How Make the County Medical Society Helpful. J. C. Irons, Dartmoor.—p. 406.
Internal Secretions. J. E. Thomas, Morgantown.—p. 409.
Acute Abdomen. A. P. Butt, Elkins.—p. 417.
Diagnosis and Operability of Exophthalmic Goiter. W. R. Laird, Montgomery.—p. 421.
Heredity and Environment. W. W. Brown, Shenandoah Junction.—p. 425.
Hodgkin's Disease. C. J. Broeman, Cincinnati.—p. 427.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

April, 1921, **44**, Part 1

Innervation of Striped Muscle Fibers and Langley's Receptive Substance. J. Boeke.—p. 1.
Relation of Hindbrain to Micturition. F. J. F. Barrington.—p. 23.
*Lesions of Posterior Tibial Nerve. C. Worster-Drought.—p. 54.
Tabes: Its Early Recognition and Treatment. E. F. Buzzard.—p. 68.
Effects Produced by Obscuring the Vision of Pigeons Previously Deprived of the Otic Labyrinth. S. Scott.—p. 71.

Lesions of Posterior Tibial Nerve.—Drought is of the opinion that injuries to the posterior tibial nerve are frequently overlooked, no doubt because they cause no striking paralysis, all movements at the ankle joint being normal. More especially do they escape recognition when the lesion lies below the point of origin of the branches supplying flexor longus hallucis and flexor longus digitorum muscles, as in such instances power of flexing the toes is retained. In all wounds involving the calf where there is a complaint of pain or weakness in the foot, a systematic examination must be made of sensation in the plantar area and of the functions of the intrinsic muscles of the foot. When sensory disturbances of long standing are the predominant feature, exploration of the nerve should be considered. If the nerve shows complete interruption, the end-bulb of the upper segment should be removed or the fibrous cicatrix excised and end-to-end suture performed. In incomplete lesions exhibiting neuralgic symptoms the freeing of an adherent nerve will usually result in considerable relief.

Dublin Journal of Medical Science

June, 1921, No. 16

*Acute Intussusception in Children. C. J. MacAuley.—p. 241.
Action of Oxidizing Ferments. W. G. Smith.—p. 247.
Heart in Pregnancy and Labor. R. J. Rowlette.—p. 260.
Method of Inducing Labor. G. Fitzgibbon.—p. 267.

Acute Intussusception in Children.—MacAuley analyzes twenty-three consecutive cases, twenty of the patients being under 1 year. Four patients died, a mortality of 17.3 per cent. Excluding one gangrenous case, the mortality was 14 per cent. Three children died of shock within twenty-four hours after operation, and one child died of bronchopneumonia. In one of the shock cases there had been anesthetic collapse during the operation, requiring prolonged artificial respiration; another was practically moribund (gangrenous case) at time of operation. Type of intussusception: enterocolic, twenty cases (ileocecal and ileo-ileocecal); colic, one case; enteric, one case; unknown, one case.

Edinburgh Medical Journal

June, 1921, **26**, No. 6

"Cardiospasm," Congenital Narrowing of Esophagus and Esophagectasia. D. M. Greig.—p. 342.
Roentgen Ray and Radium Therapy. R. Knox.—p. 348.
Postoperative Morbidity in Relation to General Anesthesia. H. T. Thomson.—p. 356.
Case of Double Congenital Hydronephrosis. R. W. Johnstone and F. J. Browne.—p. 369.
Statistical Survey of Tuberculosis of Skin. F. Gardiner.—p. 374.

Glasgow Medical Journal

June, 1921, **95**, No. 6

Ophthalmology in Modern Medical Practice. A. F. Fergus.—p. 385.
Wound of Thoracic Duct in Removal of Tuberculous Cervical Glands. G. H. Edington.—p. 398.
Examination of Blood in Cases of Cancer of Breast in Regard to Operation and Prognosis. E. D. Anderson.—p. 402.

Journal of Laryngology, Rhinology, and Otology, London

June, 1921, **36**, No. 6

Some Discarded Theories and Methods. P. McBride.—p. 269.
Injuries to the Ear in Modern Warfare. T. J. Faulder.—p. 277.
Injuries to the Ear in Modern Warfare. L. Colledge.—p. 283.

Journal of State Medicine, London

June, 1921, **29**, No. 6

Effects of Chronic Lead Poisoning; Arteriosclerosis. G. B. Page.—p. 161.
Infant Welfare Center as Factor in Social Evolution. W. J. Cox.—p. 169.
Venereal Disease Problem from Legislative Point of View. J. Stoddart.—p. 180.
Legislation in Australia Relating to Venereal Disease. G. R. Hamilton.—p. 189.

Journal of Tropical Medicine and Hygiene, London

June 1, 1921, **24**, No. 11

*Certain Forms of Bronchitis Clinically Resembling Tuberculosis: Bronchohemisphorosis, Bronchomoniliasis, Broncho-anaeromycosis. A. Castellani, M. Douglas and T. Thomson.—p. 150.
Differential Diagnosis in Tropical Fevers. W. M. McDonald.—p. 153.
*Improvised Antiseptic Adhesive Dressing. J. A. Taylor.—p. 155.

Bronchitis Clinically Resembling Tuberculosis.—Of bronchial and broncho-alveolar affections simulating tuberculosis which, however, are not due to the tubercle bacillus, the authors discuss bronchohemisporosis, bronchomoniliasis, and broncho-anaeromycosis. The fungi they have found in cases of bronchohemisporosis have been *Hemispora rugosa*, Cast., 1910, and *H. pararugosa*, Castellani, Douglas and Thomson, 1921. The fungi most frequently found in bronchomoniliasis are those of the type *Monilia tropicalis*, Cast., *M. pinoyi*, Cast., *M. metalondinensis*, Cast., and *M. krusei*, Cast. The term broncho-anaeromycosis is used to denote a broncho-alveolar condition, often simulating tuberculosis, in which a strictly anaerobic bacillary fungus, showing transition characters between a bacterium of the genus *mycobacterium*, Lehmann and Neumann (*B. diphtheriae*, diphtheroid bacilli) and fungi

of the genus *Nocardia toni* and *trevisan* (*Actinomyces Harz, Discomyces Rivolta, Streptothrix Rossi Doria, Oospora Sauvageau* and *Radais, Cohnistreptothrix Pinoy, pro parte*) has been found; *Anaeromyces bronchitica*, Castellani, Douglas and Thomson. This obligate anaerobic bacillary fungus morphologically resembles a diphtheroid bacillus, but in special medium presents more distinct branching. It is nonmotile, gram-positive, not acid fast, and does not produce actinomitic granules in the affected tissues. Whether this fungus is the specific causative organism cannot yet be stated with certainty, but it apparently plays a certain rôle in the etiology of the condition as the administration of anaeromyces vaccine often causes the disappearance of all the symptoms, and has a specially rapid beneficial action in hemorrhagic cases.

Improvised Antiseptic Adhesive Dressing.—Eucalyptus oil and guttapercha tissue are used by Taylor as a dressing, and if applied with care can be made almost as adherent as ordinary adhesive plaster and in many respects has advantages over the latter. Strips or pieces of any size or shape can be cut from the large sheets in which the tissue is supplied. If desired only the part actually in contact with the skin need be made adhesive. The oil is antiseptic and sometimes does away with the necessity for any other dressing. By use of more or less oil the amount of adhesion can be regulated. When removal is required this can be effected by use of more solvent without difficulty or discomfort, which is more than can be said of ordinary adhesive plaster.

June 15, 1921, **24**, No. 12

Mechanism of Immunization, with Special Reference to Lipase. J. A. Shaw-Mackenzie.—p. 161.
Case of Spontaneous Rupture of Spleen in a West African. A. Ingram.—p. 164.

Lancet, London

June 18, 1921, **1**, No. 5103

*Relation of Heart Disease and Pregnancy. J. Mackenzie.—p. 1281.
*Surgery of Lung and Pleura. III. Present Position of Surgery with Reference to Diseases of Thorax. G. E. Gask.—p. 1286.
*Operation of Ventrifixation. J. E. Gemmell and A. L. Robinson.—p. 1291.
Treatment of Urinary Incontinence by Electrical Methods. F. Hernaman-Johnson.—p. 1295.
Squint: Question of Early Operation. W. B. I. Pollock.—p. 1296.
*Treatment of Cases of Syphilis with a Persistent Positive Wassermann Reaction. C. F. Marshall and A. G. Shera.—p. 1299.
Open Safety Brooch in Esophagus for Nine Month. C. H. Carroll.—p. 1300.
Case of Locked Twins. D. V. Murphy.—p. 1300.
Case of Aluminum Poisoning. J. Spofforth.—p. 1301.
Case of Recklinghausen's Disease. F. McG. Loughnane.—p. 1301.

Relation of Heart Disease and Pregnancy.—The idea that a perfectly sound heart may show a murmur is so surprising to many doctors, Mackenzie says, that they cannot accept it. Their view seems to be that if murmurs are not organic they are functional and imply debility or some other condition of weakness. That a murmur may be as physiologic as a pure sound is altogether outside the limits of this faith. The detection of an innocent murmur has often supplied a reason for forbidding pregnancy or even marriage. To make any progress at all it is necessary to understand wherein lies the danger associated with murmurs. Most murmurs seem to arise at the valve orifices of the heart. It has been demonstrated that certain damaged valves give rise to abnormal sounds, and it is evident from the appearance of the valves postmortem that the flow of blood must have been hindered on passing through the orifice or that the valves, being incompetent, have allowed blood to escape backwards. In this way the work of the heart muscles has been hampered. An additional burden being thus thrown on his heart, a man leading his usual life puts a greater strain on this organ than it is fit to bear. Thus it is only a matter of time until the muscle becomes exhausted and heart failure sets in. But there are murmurs which do not indicate damaged valves, or valves damaged to such a degree as to cause embarrassment to the heart, and it is necessary to distinguished between these murmurs and those which indicate valve damage which embarrasses the heart. In this paper Mackenzie discusses in detail physiologic and functional murmurs; systolic murmurs and heart failure; differentiation of functional from organic murmurs; significance of systolic and organic murmurs; mitral regurgitation, nature of the valve changes and character of the murmur; mitral regurgitation and failure of heart muscle; mitral regurgitation with auricular fibrillation; mitral regurgitation and pregnancy; mitral stenosis; origin and progress of the cicatrising of the mitral valves; accompanying changes in the heart muscle; cause of heart failure; presystolic and systolic murmur in mitral stenosis; appearance of auricular fibrillation; heart failure in mitral stenosis, and in mitral stenosis with pregnancy; estimation of the significance of mitral stenosis in pregnancy, aortic disease; aortic stenosis and aortic regurgitation; heart failure and aortic regurgitation; aortic regurgitation and pregnancy.

Surgery of Thorax.—During the past 600 years, Gask says, surgery of the chest has at times receded and at times advanced, and at no period has such progress been made as occurred during the last war. During that time surgeons overcame their dread of opening the closed thorax and learned to repair a wounded lung and restore it to its normal function. It has also been demonstrated that in civil practice it is possible with safety to the patient and without expensive apparatus to open the chest widely and to deal with discarded processes which previously were unrelieved. The evidence that has been brought forward is intended as proof that the operation of thoracotomy is a sound and reasonable one. Gask submits that more and more operations on the chest should be undertaken, and that with a wider experience the operation of thoracotomy will become as useful and ordinary as that of laparotomy.

Ventrifixation.—The after-results of 220 cases are analyzed by Gemmell and Robinson. They consider that ventrifixation is a simple and useful operation for certain types of uterine displacement. Postoperative intestinal complications do not occur and subsequent gestation and parturition are not interfered with if suitable technic is employed. The frequency of abortion is diminished and fertility increased. The percentage of patients subjectively cured is satisfactory, and the occurrence of symptoms after operation is largely due to factors beyond the control of the surgeon, namely: (*a*) labor; (*b*) overexertion; (*c*) recurrence of infection, (*d*) the menopause, and (*e*) neurosis.

Treatment of Syphilis with Persistent Wassermann Reaction.—Marshall and Shera are of the opinion that the possibility of the Wassermann reaction remaining positive in the absence of active spirochetosis has not yet been disproved. But, as it is equally impossible to disprove the contrary hypothesis, it is best in actual practice to regard a patient with a persistent positive reaction as one who is not definitely cured and as a subject for further observation and possibly further treatment. The authors consider that a persistent positive reaction is not, by itself, sufficient evidence to decide the question of further treatment, and that they should be guided equally by the clinical progress of the case, the nature of the former symptoms, and the intensity and duration of previous treatment. If clinical symptoms have been present comparatively recently (say, during the last twelve months), they hold that further treatment is advisable; but if symptoms have been absent for more than a year, that the advisability or not of further treatment should depend chiefly upon the clinical course of the case. If further treatment is decided on, this should differ materially from that given previously. They suggest that sulphur should form part of this treatment without venturing on any hypothesis to explain its possible action.

June 25, 1921, **1**, No. 5104

Unsolved Problems in Gynecology and Obstetrics. W. B. Bell.—p. 1339.
*Heart Disease and Pregnancy. IV. Irregular Heart Action. J. Mackenzie.—p. 1342.
Epidemiology of Measles in a Rural and Residential Area. R. M. F. Picken.—p. 1349.
Necessity of Notification of Measles. R. Dudfield.—p. 1353.
Sanatorium Controls. E. Ward.—p. 1354.
*Delayed Tetanus Treated with Large Doses of Anti-Tetanic Serum. S. E. Denyer.—p. 1356.
Diverticulitis with Metastatic Suppuration. W. E. Foggie.—p. 1357.

Irregular Heart Action.—This is the last of Mackenzie's four lectures on this subject. Summarizing his remarks he says: As the danger of attending pregnancy in women with heart disease is the occurrence of heart failure, the physician must keep clearly before him the symptoms by which this can

be recognized. The absence of a clear conception of the nature of these symptoms has too often led to a misunderstanding of their significance. No sign manifested by the heart itself gives information as to the functional efficiency of the organ, and consequency the signs of heart failure must be looked for in other directions and more especially in those structures whose blood supply is likely to be reduced by the weakening of the circulation. Extreme heart failure is shown by such signs as dropsy, enlargement of the liver, edema of the bases of the lungs, or cyanosis. Early heart failure may be revealed by no sign when the body is at rest, and may only be discovered by distress evoked when some effort is made which the patient was wont formerly to perform in comfort. The signs of distress, so far as women in the childbearing period are concerned, are breathlessness and palpitation. Pain on effort may be present in certain cases of mitral stenosis and aortic disease; but, as a rule, the pain of grave heart failure is a sign which occurs much later in life. From this it follows that no single sign shown by the heart itself, however abnormal it may seem, should be a bar to pregnancy.

Antitetanic Serum Treatment of Delayed Tetanus.—A man, aged 24, entered the hospital with inability to open his mouth. He had been wounded five months before and had sustained a gunshot wound of the face, right arm, and right leg. His right eye had been excised and antitetanic serum was stated to have been administered on the same day, and again a few days later. On admission he was able to walk into the ward. There was marked trismus, he being unable to open his mouth more than one-eighth inch; back rigid, neck stiff, and any endeavor to sit up brought on a severe spasm of the jaw. No headache, temperature normal, pulse rate 100; he complained of a cough and some pain over insertion of diaphragm. Slept well; no mental symptoms, tremors, or Kernig's sign, but marked increase of the reflexes. No local pain in the wounds which were healed, but a local increase of reflex excitability in the muscles of the face. No sore throat or difficulty in swallowing. There was considerable general muscular rigidity. Intrathecal, intramuscular, and subcutaneous injections of antitetanic serum were given, 236,500 units in all, over a period of about three weeks. This case illustrates the value of large doses of serum in the treatment of tetanus.

Medical Journal of Australia, Sidney

May 7, 1921, **1**, No. 19

Focal Infection and Its Limitations. S. Pern.—p. 377.
*Case of Twin Tubal Pregnancy. J. I. Hunter.—p. 380.
Case of Malaria Infected in The Riverina, New South Wales. H. J. Clayton and L. Utz.—p. 382.

Case of Twin Tubal Pregnancy.—The specimen described by Hunter was removed at operation, the note accompanying the specimen stating that it was "a six weeks' abdominal pregnancy which had ruptured through the fallopian tube 1.8 cm. from the right cornu of the uterus." On further inquiry, it was ascertained that, clinically, the case was one of ectopic pregnancy with no unusual features. On examination of the mass removed at operation, it was found to consist of a uterine tube and two distinct chorionic vesicles of unequal size.

May 14, 1921, **1**, No 20

Treatment of Acute Anterior Poliomyelitis. W. Vickers.—p. 396.
*New Test of Renal Efficiency. R. J. Silverton.—p. 397.
Cases of Ductless Glands Therapy in Insane. J. Bentley.—p. 399.

New Test of Renal Efficiency.—A preliminary report is made by Silverton on the results of application of the urea concentration test (MacLean) to cases of urinary surgery. On applying the test to healthy people he found that the reading usually rose to the neighborhood of 3 per cent. during the second hour after the ingestion of the urea. In disease the reading was lowered in proportion to the extent of renal damage. The lowest reading obtained was 0.65 per cent. This was in the case of a man whose kidneys proved at necropsy to be destroyed very extensively. The cause was back pressure due to enlarged prostate. In applying the test certain precautions are absolutely necessary. The reading may be seriously influenced by the composition of neighboring meals and even more seriously should the patient ingest any fluids or solids before or during the test. In all the cases tested a fixed routine was adopted in order to keep the method as uniformly accurate as possible. A breakfast of 230 c.c. (8 ounces) of tea and one round of buttered toast was given at 8 a. m. At 10 a. m. the 15 gm. of urea dissolved in 100 c.c. water were taken. Except this nothing was eaten or drunk from breakfast until 12 noon, that is until after the collection of the second hour's urine had been made. In this manner all disturbing influences are avoided. Forty-four cases of various types of prostatic obstruction were submitted to the test, as well as four cases of renal tuberculosis, one case of calculous pyonephrosis and two cases of urethral stricture.

Practitioner, London

June, 1921, **106**, No. 6

Hyperthyroidism and Hypothyroidism. J. Barr.—p. 381.
Medical Aspects of Flat-Foot. R. Hutchison.—p. 400.
Retropharyngeal Abscess: Five Cases. F. C. Pybus.—p. 403.
Cause and Treatment of Adenoids. J. Kynaston.—p. 407.
Abortive Treatment of Gonorrhea in Male. H. W. Bayly.—p. 411.
Red Hair and Tuberculosis. W. C. Rivers.—p. 419.
History of Tuberculosis. H. E. Symes-Thompson.—p. 426.
Theory of Origin of Bacteria. D. Mulloy.—p. 435.

South African Medical Record, Cape Town

May 28, 1921, **19**, No. 10

Etiology of Scurvy. A. J. Ortnstein.—p. 183.
Clinical Side of Scurvy in Mine Native Laborer. S. Donaldson.—p. 187.

Tubercle, London

June, 1921, **2**, No. 9

Climate and Weight of Tuberculous Patients in South India. C. Frimodt-Möller.—p. 385.
Lung Collapse Therapy in Connection with Pleural Adhesions. J. Gravesen.—p. 395.
Bronchopulmonary Spirochetosis: Report of Two Cases. C. J. C. Faill.—p. 401.

Archives de Médecine des Enfants, Paris

February, 1921, **24**, No. 2

An American Colony of War Orphans. Bouquier.—p. 103.
Apparently Cleft Tongue from Overshort Frenulum. V. Veau and C. Rupp.—p. 113.

March, 1921, **24**, No. 3

*Amyotrophy or Myatonia? Leenhardt and Sentis.—p. 137.
*Meningococcus Meningitis. P. Woringer.—p. 159.
Hemicraniosis. A. Léri.—p. 169.
Duodenal Stenosis. J. Comby.—p. 175.

Amyotrophy or Myatonia?—Leenhardt and Sentis report that two infants, 3 and 9 months old, had developed flaccid paralysis with amyotrophy, hypotony and loss of reflexes, sparing the face, diaphragm and smooth muscles. Necropsy disclosed diffuse atrophy, without inflammatory reaction or vascular sclerosis, in the motor cells of the anterior cornua, of the anterior roots, in the motor nerve fibers and muscle fibers. The lesions seem to be identical in both, suggesting both Oppenheim's congenital myatonia and Werding-Hoffmann's spinal amyotrophy although the latter is of a familial type and begins in early infancy, is accompanied by atrophy of muscle and the reaction of degeneration, and runs a progressive course. The Oppenheim myatonia is not familial but congenital, and is not accompanied by true amyotrophy and the muscles feel soft and flabby, and progressive improvement is the rule. The findings and course in these infants show that these two affections are akin as a chronic form of diffuse poliomyelitis in young children. The literature on the subject is compared with these cases.

Ventricular Form of Meningococcus Meningitis.—Woringer calls attention to the insidious onset of the meningitis in the two cases he describes in infants, and the complete absence of meningococci from the spinal fluid all through the disease. The meningococci were found swarming in the ventricles at necropsy in one case, and were cultivated from the puncture fluid from the ventricle in the other. The primary meningococcus ventriculitis had been walled off in both cases, and it proved fatal in both. Direct injection of the antiserum into the ventricle generally comes too late in such cases in infants, but recovery is known in nine of forty-seven cases in children and adults.

Bulletin de l'Académie de Médecine, Paris

May 24, 1921, **85**, No. 21

Dangers of Radium. C. Regaud.—p. 608.
*Rehabilitation of the Wounded. Dijonneau, Gourdon and Thibaudeau. —p. 612.

Rehabilitation of the Wounded.—Six years have passed since vocational training of the war wounded was begun in France. This communication from the Bordeaux training school states that of the 2,000 more or less crippled soldiers that have there been given training, all but 33 are doing remunerative work. Of the total, 1,231 were able to resume their former occupation and 736 were trained for a new one. The work done by the rehabilitated, as a whole, averages from 60 to 75 per cent. of the normal output. The gravity of the anatomic lesion or functional impotence does not necessarily entail a corresponding occupational handicap.

May 31, 1921, **85**, No. 22

*Dangers of Radium. T. Tuffier.—p. 617.
*Congenital Epidemic Encephalitis. R. Mercier, Andrieux and Bonnaud.—p. 625.
*Operative Treatment of Arthritis Deformans. Lejars.—p. 627.
*Tuberculosis After Industrial Accidents. A. Broca.—p. 629.
*Congenital Helminthiasis. Neveu-Lemaire.—p. 632.
*Microscopy of Uterus After Radium Treatment. T. Tuffier.—p. 635.

Dangers of Radium.—Tuffier here publishes the replies he has received from America in response to his questions as to injury from handling radium. His replies from Cushing, Halstead, Brower and the Mayo brothers confirm from their extensive experience that danger can be warded off by proper precautions.

Congenital Epidemic Encephalitis.—Mentioned in Paris Letter on p. 135.

Operative Treatment of Arthritis Deformans.—Lejars has added three new ones to his list of cases of pain and crippling from this cause in which the pain was abolished and partial use of the limb restored by opening up the joint and resecting or otherwise correcting conditions so far as possible. These patients were two women and one heavy man in the fifties. The benefit is durable; one woman in his early series has not suffered from the knee operated on during the eighteen years since.

Bone and Joint Tuberculosis from Standpoint of Workmen's Compensation.—Broca recalls that there is a history of visceral or glandular tuberculosis in practically every case of tuberculous lesions in bones or joints. On the other hand, tubercle bacilli are very rarely found in the blood in the chronic tuberculous. Still another argument against the traumatic origin of bone and joint tuberculosis is his discovery that none of 500 children whom he has treated for contusions, sprains or other trauma before 1913 has developed a tuberculous process since in the region of the injury. The industrial accident which every one is so prone to hold responsible for the tuberculous lesion in reality probably merely revealed its unsuspected presence. He argues further that the movement which reveals the pathologic condition may not be greater or more vigorous than the ordinary movements, although claimed as trauma by the subject. Two important practical conclusions are evident from his data. One is that every accident involving a bone or joint should be radiographed immediately; this would do away with the necessity for much litigation. The other conclusion is that any history of a tuberculous bone or joint affection should exempt from military service with its right to a pension for any affection declared or aggravated later than sixty days after being enrolled.

Congenital Helminthiasis.—Only one instance in man is cited, but the suggestion is made that routine examination of infants' stools, in warm countries at least, might frequently reveal the ova of helminths. When found before the close of the fourth week, the infestation was probably congenital.

Findings in Uterus After Radium Exposures.—The fibromatous uterus had to be removed two months after two applications of radium with a month's interval. Letulle gives four photomicrograms of the findings. They show that the destructive lesions induced by the radium expose the uterine mucous membrane to danger of secondary bacterial invasion for a time. The vessels gape without tendency to become thrombosed, and hemorrhage is thus liable as the eschar drops off.

June 7, 1921, **85**, No. 23

*Dangers of Radium. Broca.—p. 651.
Poisoning from Arsenic Used in Vineyards. P. Cazeneuve.—p. 660.
Small Doses of Digitalis Preparation in Treatment of Asystolia. A. Manquat.—p. 671.
Traumatic Origin of Chronic Hygromas. Rochard.—p. 685.
*The Oculocardiac Reflex. J. Roubinovitch and J. A. Chavany.—p. 687.

Dangers of Radium.—Broca presents the report of the committee appointed to study this subject. It states "The dangers are real, but they are easily avoidable, with proper precautions, for all except the manipulators of the emanation and during radioscopy. But society has to have these regardless of the danger, just as physicians have to expose themselves daily to contagious diseases. The probability of injury is about the same in both these fields, but the dangers are faced by men who accept them in view of the importance of the task, and who know the precautions to be taken." . . . "If some of them suffer in consequence of their devotion, notwithstanding the known precautions, the instances will be rare, and they will be accompanied by our respect and our gratitude."

The Oculocardiac Reflex in Epileptics.—Roubinovitch and Chavany use a mechanical device with which the pressure on the eyeball can be graduated. They report that in fifty of eighty epileptics tested, the bradycardia induced by the compression persisted for some time after cessation of the pressure. In 62.5 per cent., however, the bradycardia from the compression was followed by tachycardia for a minute or two. This residual tachycardia, as they call it, offers a new means for differential diagnosis of the tendency to epilepsy in dubious cases, and may serve also as a guide in estimating the effect of therapeutic procedures.

Bulletin Médical, Paris

May 14, 1921, **35**, No. 20

Digestive Disturbances of Endocrine and Sympathetic Origin. G. Lyon. —p. 395. Conc'n in No. 21.
Useful Drugs in Dermatology. Veyrières and Ferreyrolles.—p. 398. Conc'n.

May 28, 1921, **35**, No. 22

Wounds of the Eyeball. F. Terrien.—p. 439.
Treatment of Traumatic Cataract. A. Cantonnet.—p. 444.
Ocular Manifestations of Syphilis. C. Coutela.—p. 446.
The Principal Hemorrhagic Syndromes of the Retina. R. Onfray.—p. 450.

June 4, 1921, **35**, No. 23

*Early Diagnosis of Meningococcus Meningitis. P. Sainton and E. Schulmann.—p. 465.
*Arthritis Deformans of Syphilitic Origin. C. Finck.—p. 466.

Early Diagnosis of Epidemic Meningitis.—Sainton and Schulmann have found that when the lumbar puncture fluid is clear in cases suspected of meningococcus meningitis, injection of 5 or 10 c.c. of antimeningococcus serum is liable to transform the clear fluid into the usual purulent fluid of epidemic meningitis. This occurs in a few hours. The antiserum induces an afflux of leukocytes and with them appear meningococci, the antiserum evidently aiding in the mobilization of the latter. Four typical cases are described in which this simple, practical and rapid method of differential diagnosis cleared up the case at once. It is especially useful in these days when atypical epidemic encephalitis may simulate the symptoms of epidemic meningitis. This response to the antiserum does not occur with ordinary meningitis nor in tetanus. In four cases described, the meningitic symptoms were extremely grave although the puncture fluid was limpid. The meningococci cluster in some focus apart, and this injection of the antiserum drives them out into the open.

Arthritis Deformans.—In Finck's case, syphilis had damaged the thyroid and parathyroids, and these in turn had induced the clinical picture of chronic deforming rheumatism in the woman of 46.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 27, 1921, **45**, No. 18

Mitral Insufficiency in Inherited Syphilis. L. Babonneix and Denoyelle. —p. 774.
*To Ward Off Reaction to Arsphenamin, etc. Sicard, Paraf and Forestier.—p. 775.
Crossed Infantile Paralysis. L. Babonneix and Pollet.—p. 778.

Malta Fever. Dargein and Plazy.—p. 781 and p. 784
*Necropsy in Case of Epidemic Hiccup Pierre-Kahn, Barbier and Bertrand.—p. 787.
Arthritis with Micrococcus Arthriticus. S. Costa.—p. 790.
*Dangers of Lumbar Puncture in Pott's Disease. G. Guillain and G. Laroche.—p. 794.
Acute Arterial Hypertension in Course of Typhoid. A. Lemierre and R. Piédelièvre.—p. 797.
Neuralgia of the Face After Therapeutic Pneumothorax. A. Ricaldoni. —p. 802.
*Traumatic Hematomyelia. L. Rimbaud and G. Giraud.—p. 807.

To Ward Off Reaction to Arsphenamin, etc.—Sicard and his co-workers have been making a special study of means to ward off the shock from anaphylaxis or digestion hemoclasis. They found that one of the most reliable is a preliminary intravenous injection of sodium carbonate before the injection of horse serum or an arsenical. Another even more reliable means is to limit the shock reaction to one limb by applying a constricting band to the root of the limb in which the antiserum or arsenical is injected. The hemoclasis occurs, but it is restricted to this limb and is harmless, while it protects the rest of the organism against further shock when the tourniquet is slowly removed five or six minutes afterward. In two patients presenting constantly a severe *crise nitritoïde* after every injection of neo-arsphenamin, this simple measure tided the patients past this danger point, and the course of treatment could be continued without further apprehension. They coined the term topophylaxis for this procedure, "arsenical anticlasis by topophylaxis." There was never any sign of local flocculation or precipitation in their cases. In one patient, a preliminary injection of 0.15 gm. for the topophylaxis allowed the rest of the dose to be given directly into the general circulation a few minutes later without harm. Louste added his testimony that by this topophylaxis he was able to continue the course of treatment in three patients otherwise responding with an alarming reaction to each injection of the arsenical.

Necropsy in Epidemic Hiccup.—This is said to be the third case of necropsy in epidemic hiccup published in Europe. The woman of 52 had had paresis of the right arm for a week when dyspnea and difficulty in swallowing developed, with hiccup, the mere sight of a glass of water aggravating the hiccup. The woman died next day, and necropsy revealed the lesions of epidemic encephalitis, only more extensive and including the upper spinal cord.

Dangers of Lumbar Puncture in Pott's Disease.—Such severe symptoms developed after lumbar puncture in several cases of vertebral caries that Guillain and Laroche feel compelled to warn against this method in the diagnosis of Pott's disease. Paralysis of the legs followed in some of the patients. They ascribe the disturbances to seeping of the fluid into the epidural space through the needle-hole. The resulting change in the tension aspirates and scatters pathologic products.

Traumatic Hematomyelia.—In the woman of 40 the injury from an automobile accident entailed the Brown-Séquard syndrome with dissociation of sensibility suggesting syringomyelia, fatal the ninetieth day.

Paris Médical

June 4, 1921, **11**, No. 23

*Infectious Diseases in 1921. C. Dopter.—p. 437.
*Serotherapy in Pneumonia. E. Sacquépée.—p. 443.
*Infection with Morgan's Bacillus in Adults. A. Besson and De Lavergne.—p. 449.
*Epidemic Encephalitis in the Pregnant. R. Jorge (Lisbon).—p. 454.
Contagiousness of Epidemic Encephalitis. C. Dopter.—p. 458.

Infectious Diseases in 1921.—In this survey, Dopter cites among the more interesting recent works on infectious diseases the report of Levaditi and Harvier on experimental epidemic encephalitis, induced in rabbits by inoculation with brain, spinal cord or optic nerve tissue from clinical cases of the disease. The filtrable virus seems to be absent from the blood, bone marrow, lungs, kidneys, spleen and liver, and rabbits bore without harm inoculation in the peritoneum, veins and trachea and also in the intact nose. When the nasal mucosa was scarified, inoculation was successful, as also in the brain, eye, testicle or peripheral nerves. The virus retains its virulence after desiccation in a vacuum, even in contact with sulphuric acid or potassium hydroxid. Successive passages through rabbits render the virus pathogenic for monkeys, guinea-pigs and mice. Their research has disproved any specific relations between the virus of this encephalitis and of poliomyelitis. Dopter's paragraph devoted to yellow fever summarizes Noguchi's communications in The Journal.

Serotherapy in Pneumonia.—The mortality was 5.4 per cent. in the thirty-seven cases of pneumonia in soldiers given serotherapy. In three cases the wrong strain was used; in some other cases coincident purulent pleurisy seemed to annul the action of the antiserum.

Infection with Morgan's Bacillus.—Besson and De Lavergne cultivated Morgan's bacillus from some cases of simple diarrhea in soldiers, and they found it also in pure culture in a case of fatal choleriform enteritis.

Epidemic Encephalitis in the Pregnant.—Jorge has compiled an obstetric series of twenty-seven cases, including Schultze's case in The Journal in 1920. The pregnancy seems to render the prognosis graver, but the evidence does not show any promise of improvement from emptying the uterus. In some cases the absence of pain at labor was commented on. In one case reported from Coimbra the child was in deep cyanosis when born and exhibited abdominal myoclonus of the same type and localization as the mother, and other signs of epidemic encephalitis. The mother died but the child rapidly threw off the disease. Santi has published a similar case of congenital epidemic encephalitis only that the disease was mild in the mother and she promptly recovered, while the infant died in a few days; necropsy revealed the typical lesions of the disease. These two cases demonstrate that the virus must circulate in the blood as otherwise it could not pass through the placenta.

Presse Médicale, Paris

June 11, 1921, **29**, No. 47

Myoclonic Uremia. H. Roger and A. Chaix.—p. 461.
*The Bacteriophagum. F. d'Herelle.—p. 463.
*Neuromuscular Electric Excitability A. Strohl.—p. 464.
Treatment of Acne. A Survey. L. Cheinisse.—p. 466.

Bacteriophagum Conferring Immunity.—D'Herelle reports the result of further research on the bacteriophagum. His preceding work was described recently in the editorial on page 126. He now announces that not only clinical improvement coincides with the appearance in the feces of a strong bacteriophagic action but that it is possible to immunize against the disease by injection of the bacteriophagum active against the causal bacterium. As convalescence develops, a bacteriophagum appears in the stools active against the pathogenic bacteria involved, and this bacteriophagum can be cultivated indefinitely in vitro at the expense of the pathogenic bacteria. When it is injected into other subjects, the pathogenic bacteria are unable to proliferate, and it is thus possible to confer immunity. He has been experimenting mainly with avian typhoid and hemorrhagic septicemia in cattle and plague in rats. Avian typhoid is an extremely contagious disease in domestic fowls. He experimented in twenty-five poultry farms with a total of 2,100 fowls. Each had lost during the preceding two weeks from 20 to 50 per cent. of the fowls from the disease. Then 600 fowls were given by ingestion 1 c.c. of a culture of the bacteriophagum active against *B. gallinarum*, and 1,500 were given a subcutaneous injection of 0.5 c.c. of the same culture. Not one of these fowls in these twenty-five poultry farms died thereafter, while the epizootic continued to decimate the other poultry farms in the vicinity. Even more convincing results were obtained with hemorrhagic septicemia in 100 buffaloes or young bulls in Indo-China. This disease kills inevitably in twenty-four hours, but injection of 0.25 c.c. of the "bacteriophagum anti" conferred immunity to such an extent that the animal could bear without harm test inoculation with a culture of the pathogenic bacterium a thousand times the positively lethal dose. Rabbits can also be rendered refractory to dysentery toxin in the same way, and in seven cases of grave dysentery in man, injection of 1 c.c. of an antidysentery bacteriophagum was followed in from twenty-four to thirty-six hours by the disappearance of blood and bacilli from the stools.

Measurement of Neuromuscular Excitability.—Strohl gives an illustrated description of the egersimeter he has devised for this purpose.

June 15, 1921, **29**, No. 48

*The Hemoclasic Reaction in the Pregnant. Didier and Philippe.—p. 473.
*Topography of Small Intestine. A. C. Guillaume.—p. 474.

The Liver in Pregnancy.—Didier and Philippe report the findings with the latest methods of testing the functioning of the liver in twenty-six apparently healthy pregnant women. Impairment of the proteopexic function of the liver was evident in only 35 per cent. after test ingestion, fasting, of 200 gm. of milk. Glucose and lactose were found constantly in the urine of twenty-two women at or close to term, and the hemoclasis reaction showed that the liver was responsible in 60 per cent. of these cases.

Topography of Small Intestine.—The location of the loops was recorded in forty cadavers and in 270 hernia cases, and compared with the roentgen-ray findings. The topography seems to be remarkably regular; certain loops are almost invariably to be found in certain locations in both the living and the dead. One of the instructive measures applied was the driving deep into the cadaver long fine needles at certain definite points.

Progrès Médical, Paris

June 4, 1921, **38**, No. 23

*Hour-Glass Stomach. F. Ramond, C. Jacquelin and Borrien.—p. 265.
Surface Tension and Viscosity of the Blood During Anti-Anaphylaxis. F. Arloing and P. Vauthey.—p. 267.
Metrorrhagia in Young Girls. Dalché.—p. 269.
Pepsin and Gastric Organotherapy G. Faroy.—p. 270.

Hour-Glass Stomach.—Ramond and his co-workers say that during the preceding month they found three cases of biloculation of the stomach at necropsies of adults, but they accept this as a cadaveric phenomenon. In one of their clinical cases, a woman of 43 had had symptoms suggesting a gastric ulcer twenty years before, but these became attenuated and symptoms indicating merely hour-glass stomach followed. The operation after twenty years of these revealed functional constriction. The primary ulcer had healed completely, but the functional disturbance it had entailed had persisted indefinitely. Spasmodic contraction may occur as a ring or as a niche, projecting inward, an invagination from reflex action, either from an ulcer opposite or cholecystitis, duodenal ulcer, appendicitis or painful salpingitis. It had persisted in one of their cases for four years to the death of the patient. This narrow deep invagination in the wall of the greater curvature from reflex action with a cancer, gradually broadens as the walls lose their elasticity until the gap in the outline of the stomach shadow becomes rounding and is mistaken for the cancer itself. This is the reason why radiologists locate the cancer as a rule in the greater curvature when in fact the cancer is on the wall opposite. If biloculation from organic cause requires treatment, it has to be surgical. They describe the various clinical pictures encountered and means to remedy conditions.

Revue de Médecine, Paris

February, 1921, **38**, No. 2

*Idiopathic Dilatation of the Esophagus. E. Bensaude and G. Guénaux.—p. 65.
*Nitrogen and Cholesterin in the Blood in Migraine. Rémond and Rouzaud.—p. 97.
Paroxysmal Congenital Cyanosis in Infant. M. Péhu and L. Langeron.—p. 113.

Diffuse Dilatation of the Esophagus.—Bensaude and Guénaux give the details of six cases of idiopathic enlargement of the esophagus and of one with atony, which demonstrates the analogy between atony and dilatation of the esophagus in such cases. Cardiospasm is by no means a constant finding with idiopathic dilatation, and there is much to sustain the assumption that the tendency to dilatation is due to some derangement of the innervation of the esophagus and cardia, modifying the peristalsis of the former and the contraction of the latter. Spasm of the pylorus has frequently concided with spasm of the cardia in their experience. The diffuse enlargement of the esophagus invites malignant disease; cancer developed in two of their six cases. The diagnosis is not always easy, even with roentgenoscopy, as they show with typical roentgenograms. In one young man an ulcer at the cardia was responsible for the dilatation; fatal perforation followed too vigorous attempts to open a passage through the cardia. Persons with this idiopathic dilatation get accustomed to it and seldom consult a physician until all solid food is arrested; in two of the cases reported the discovery of the dilatation was a surprise during roentgenoscopy for some other reason. There may be a sensation as of a ball or an insect in the throat, which diverts attention, being accepted as an indication of hysteria. Some of their patients were obliged to sleep semiseated to prevent vomiting on reclining. In one case abortion had been induced, as the uncontrollable vomiting had been ascribed to the pregnancy; relief was finally obtained by gastrostomy and retrograde dilatation of the cardia. In another case the supposed dilated esophagus proved to be the congenitally intrathoracic stomach.

The Nitrogen and Cholesterin Content of the Blood in Migraine.—Rémond and Rouzaud have been applying tests of liver and kidney functioning in forty-six cases of migraine between attacks. Their findings show that far from being "perfectly well between attacks," as some textbooks say, azotemia and cholesterinemia and low blood pressure indicate that liver, kidneys and heart are temporarily or permanently below par. A tendency to sagging kidney is also common with migraine. Treatment of migraine should be much the same as for gout, dietetic, exercise in the open air, etc. Drugs to stimulate the liver add another poison to those already in evidence, but sodium sulphate or sodium citrate in small, repeated doses may render good service, and liver and bile organotherapy even more. A vigorous course of alkaline mineral waters is one of the most useful weapons in our arsenal. A sagging kidney should be fastened in place; this alone may suffice to ward off further attacks. A connection with thyroid or ovarian insufficiency is evident in some cases, and these benefit from the proper organotherapy.

Schweizerische medizinische Wochenschrift, Basel

May 26, 1921, **51**, No. 21

*Osmotic Hemolysis. E. Reicher.—p. 481.
Local Anesthesia in Treatment of Fractures. E. Hagenbach.—p. 488.
Paraplegia in a Syphilitic. L. Monfrini.—p. 490
Greasing the Sole to Obtain Outline for Flat-Foot Inlay. H. Debrunner.—p. 493.

Toxic Injury of Blood Corpuscles.—Reicher tested the resisting power of the erythrocytes to various hypotonic salt solutions in various diseases, and tabulates the findings. She emphasizes that the blood corpuscles are easily accessible "surviving organs" which allow a glimpse into the actual condition of the body cells at the moment. Her tables confirm that the toxic substances generated in infectious diseases injure the cells of the body, as evidenced in the prompter laking of the blood, and that this occurs likewise in conditions of undernourishment. The fluctuations in osmotic hemolysis parallel the corresponding injury of the tissues, and hence these readings throw light on the biologic process and on the prognosis. Reicher is assistant in Sahli's medical clinic, and the tests were applied to nearly 100 subjects, including nine over 60. In the normal, hemolysis begins at the 0.46 or 0.44 per cent. solution of sodium chlorid. Total hemolysis occurs at 0.36 to 0.30 per cent. In the aged, hemolysis began between 0.52 and 0.60 per cent. and was complete at 0.32 to 0.40 per cent. saline. Each of the set of test tubes contains 20 mm. of blood and 3.5 c.c. of physiologic sodium chlorid solution, differing in concentration by 0.02 per cent. The reading occurs in ten minutes and again at the second and twenty-fourth hours at room temperature. The blood is allowed to lie along the walls of the tube for a few seconds, to oxygenate it, before the saline is gently added.

Riforma Medica, Naples

May 28, 1921, **37**, No. 22

Hemorrhagic Leukemic Infiltration in Thigh Muscles. Taddei.—p. 505.
Apparatus for Determination of Tension of Alveolar Gases. A. Barlocco.—p. 507.
*Action of Thermic Stimulation of Skin on Mucosa of Trachea and Bronchi. A. Azzi.—p. 509.
Fracture of Base of Skull. C. Righetti.—p. 511.

Therapeutic Anaphylaxis. E. Pesci.—p. 514.
*Cancer of Rectum. E. Aievoli.—p. 517.

Variations of Temperature of Mucosa of Air Passages to Correspond to Thermic Stimulation of Certain Areas of the Skin.—Azzi adds five clinical experiments and a further series on animals to his previous series which have all been concordant in demonstrating that the expired air (and hence the lining of trachea and bronchi) has its temperature reduced by from 0.4 to 0.6 of a centigrade degree when certain regions of the skin are chilled. This occurs although the general temperature may show no decline. The drop in temperature is transient but it testifies to the parallel vasomotor phenomena in the skin and in the mucous membrane of the entire respiratory tract, vasodilation in one being accompanied by vasodilation in the other, and the same holds good for vasoconstriction. The respiratory mucous membrane can therefore be regarded as forming part of the peripheral circulation. These phenomena explain pneumonia after chilling, for example, and the peculiar liability to secondary infection after tracheotomy. One practical conclusion from this research is the advantage of applying ice to the skin to arrest hemoptysis. Empiric revulsion to the skin, inducing local hyperemia, starts the same process of hyperemia in the air passages. Azzi's previous report on this subject was summarized, June 11, 1921, p. 1713.

Cancer of the Rectum.—Aievoli compares some recent works on the technic for operative treatment of malignant disease of the rectum, especially by the combined abdominal and perineal route.

Brazil Medico, Rio de Janeiro

May 7, 1921, **35**, No. 19

*Carcinoma in Nail Matrix of Big Toe. C. Pinheiro Chagas.—p. 233.
Milk and Infant Mortality. Mariano Cursino.—p. 235.
Plans for Child Welfare Exposition. Moncorvo Filho.—p. 236.

Cancer in Nail Matrix.—Pinheiro comments on the rarity of malignant disease originating in the nail. The textbooks scarcely mention it, and Heller could compile in 1,900 only three cases for his work on disease of the nails; one was on the hand. In the case here illustrated, in a laboring man of 60, the toe had been injured in an accident eighteen years before the epithelioma developed in the nail matrix of the big toe.

Gaceta Médica de Caracas

March 15, 1921, **28**, No. 5

Indirect Campaign Against Venereal Disease. Medina Jiménez.—p. 55.
*Bilharziasis and Its Treatment. J. Quintini M.—p. 56.
*Serotherapy of Mumps. J. de D. Villegas Ruiz.—p. 60.
Delbet's Vaccine Therapy. Razetti.—p. 61. Idem. Villegas Ruiz.—p. 64.
Splenomegalia. F. A. Risquez.—p. 65.

Bilharziasis.—Quintini has been giving tartar emetic to nine patients with bilharziasis, beginning with injection of 2 cg. to a total of 108 cg. in the course of one or two months. The cases were of the pseudodysentery, febrile, or liver types, and great improvement was the rule, no ova being found in the stools thereafter, three specimens examined on alternate days. The debility was extreme in one man with hookworm and ascarids in addition to *Schistosoma mansoni*, and he died in two days after the course was begun. Seven other patients failed to complete the course. In some of the patients the injection caused nausea, cough or chilliness, but this was easily prevented by giving a little codein an hour beforehand.

Diphtheria Antitoxin in Treatment of Mumps.—Villegas quotes some French and Italian clinicians who treated mumps in young men with injections of diphtheria antitoxin, hoping in this way to ward off complicating orchitis. One reported a series of twenty-six cases without orchitis; another a series of seven cases, and another only 5 per cent., in sixty cases. These figures encourage further trials when compared with ordinary statistics which show orchitis on an average in 20 per cent. of the cases of mumps, with resulting atrophy of the testicles in 50 per cent. of those involved.

Revista de la Asoc. Médica Argentina, Buenos Aires

January to April, 1921, **34**, No. 195-198

Consequences of Vagotomy in Guinea-Pigs. L. Giusti and B. A. Houssay.—p. 7.
*Fatty Degeneration in Fetus. P. I. Elizalde and J. J. Puente.—p. 10.
Experimental Destruction of Suprarenals. L. Giusti.—p. 15.
*Pituitary Extract and Motor Function of the Stomach. J. C. Galán.—p. 20.
*Contradictory Action of Pituitary Extracts. B. A. Houssay.—p. 23.
Suprarenals Do Not Modify Action of Pituitary Extracts. Id.—p. 26.
*Nervous Factor in Water Diuresis. O. M. Pico and J. J. Murtagh.—p. 28.
Ammonia Gas Poisoning. M. R. Castex, Romano and Galán.—p. 33.
Tuberculoma in Cerebellum. I. Allende and T. Martini.—p. 48.
Work of Austrian Red Cross in Fighting Epidemics. S. Mazza.—p. 71.
*Sarcoma of Conjunctiva. A. Oyenard.—p. 87.
*Hydatid Cyst in Vertex of Orbit. A. Tiscornia.—p. 92.
*Flat Sarcoma of the Choroid. R. Argañaraz.—p. 101.

Acute Fatty Degeneration in Fetus at Term.—Elizalde and Puente found signs of acute fatty degeneration in the parenchymatous organs of a child delivered by cesarean section after two days of ineffectual labor. They ascribe this acute degeneration to the effect of the ether given the mother, and the injury from the protracted labor. Deficient oxygenation in itself has a tendency to induce fatty degeneration.

Effect of Pituitary Treatment on the Stomach.—Galán's tests of the action of pituitary extract on the surviving stomach of the frog, cat, dog, rabbit, guinea-pig and white rat confirmed that it stimulated motor functioning of this organ, as also in the natural stomach of the dog when injected by the vein.

Pituitary Extracts.—Houssay explains how these extracts may differ in their action according to mode of preparation and deterioration with age, as well as with the dose, the species of animal, and the modification of the effect by anesthetics.

The Nervous Factor in Diuresis from Water.—The output of water after ingestion of a given amount was found to differ considerably in normal dogs and dogs that had had the nerves innervating the kidneys severed.

Melanosarcoma of the Conjunctiva.—The case described in the man of 50 is the only one encountered in the ophthalmologic service at Buenos Aires in the last fifteen years, out of a total of 100,000 applicants.

Hydatid Cyst of Orbit.—The location of the cyst in the apex of the orbit rendered the differential diagnosis puzzling, and required a Krönlein operation to reach it.

Flat Sarcoma of the Choroid.—Argañaraz states that thirty-two cases of sarcoma of the uveal tract have been encountered at the eye clinic at Buenos Aires during the thirty-five years of its existence up to 1915, but no instance of diffuse "surface" sarcoma. Since then two cases of the latter have required enucleation. Fuchs has compiled only four of the kind in European literature. In Argañaraz' cases one patient was a man of 30; in both cases the melanotic sarcoma lay like a shell around the choroid, encircling more than half of its circumference. Vision is completely lost before glaucoma develops; one of the patients was blind for a year before any other symptom attracted attention. The loss of vision is usually rather abrupt.

Revista Médica del Uruguay, Montevideo

May, 1921, **24**, No. 5

Ectromelia of Legs in New-Born Infant. M. Armand Ugon.—p. 201.
*Endocarditis Consecutive to Abortion. C. P. Colistro and M. Silva Ferrer.—p. 203.
*Serotherapy in Pregnancy Toxicoses. F. Cortabarria.—p. 210.
Intestinal Hemorrhage in Young Infant. C. Pelfort.—p. 218.

Septic Endocarditis Secondary to an Abortion.—The clinical history of the case reported, supplemented by the necropsy findings, showed that the woman had borne her old mitral stenosis for many years with perfect compensation through two childbirths. Then came a septic abortion, with embolism, the embolus lodging in the mitral valve, with septic endocarditis and further embolism, the embolus this time lodging in the brain. Evidences of a latent tuberculous process in the lungs were found likewise, confirming that mitral stenosis plus tuberculosis does not interfere with normal pregnancy and childbirth so long as secondary infections can be warded off.

Serotherapy in Pregnancy Toxicoses.—Cortabarría states that no benefit followed injection of serum from a healthy pregnant woman in the first of the two cases of pregnancy

intoxication he reports. This was the tenth pregnancy of the woman of 30, and she had had jaundice and pruritus at each with other signs of insufficiency of the liver. Under calcium chlorid and epinephrin the pruritus subsided somewhat. The second patient had uncontrollable vomiting, and this too proved refractory to injection of serum from a healthy woman at the fifth month of a pregnancy. He accepts jaundice in cases of uncontrollable vomiting as warning to empty the uterus at once.

Semana Médica, Buenos Aires

April 28, 1921, **28**, No. 17

*Hydatid Cyst in Uterine Wall. A. Chueco.—p. 481.
*Induced Pain as Sign of Kidney Calculus. J. R. Goyena.—p. 487.
*Epithelioma of Male Urethra. S. Barabino Amadeo.—p. 488.
*Protein Therapy of Hypopyon. Almeida Huerta.—p. 502.

Cyst in Posterior Wall of Uterus.—Chueco comments on the difference between the precautions required at a laparotomy opening up a focus of infection in the adnexa, for example, and opening up a focus through the vagina. With the latter route, if the focus should be ruptured and infectious material scattered, it would do no harm in comparison to the consequences of such a rupture scattering infectious material over the peritoneum. This reasoning guided him in the case of the large intramural hydatid cyst here described, in a virgin of 15. The exploratory laparotomy revealed the huge cyst, but Chueco then closed the abdomen and attacked the cyst through the vagina.

Differential Pain with Calculus in Kidney.—Goyena recalls the diagnostic importance of the pain induced in the kidney by percussion of the lumbar region. Percussing from the eighth dorsal vertebra, when the kidney region is reached, the patient exclaims with the sharp sudden pain induced. If there has already been an attack of pain suggesting kidney colic, this sign differentiates the cause. With any abdominal affection, percussion of the lumbar region will usually elicit more or less painful sensations, but nothing like the severe, deep visceral pain experienced with nephrolithiasis.

Epithelioma of Male Urethra.—Barabino reports a case with photomicrograms and necropsy findings. It was inoperable when first seen in the man of 53. He discusses the early symptoms in such cases, emphasizing their vague character and the necessity for routine endoscopy and microscopic examination of an excised scrap as the only means for detection in time to arrest the malignant disease.

Protein Therapy of Hypopyon.—In the case described, in a man of 35, the hypopyon had developed after contusion of the eye. It retrogressed after five intramuscular injections of 10 c.c. of milk, but traumatic cataract developed later.

Archiv für Gynaekologie, Berlin

1920, **114**, No. 1

*Duration of Pregnancy from Medicolegal Standpoint. C. Ruge.—p. 1.
*Genital Tuberculosis in Women. R. Kundrat.—p. 51.
*Endogenous Infection in Gynecology. R. Salomon.—p. 105.
Operative Treatment of Retroversioflexio Uteri. A. Seitz.—p. 141.
Volume of the Blood During Pregnancy. A. Mahnert.—p. 168.
Theory as to Origin of Vesicular Mole. Hinselmann.—p. 197.

Duration of Pregnancy.—Ruge declares that it is impossible to calculate exactly the duration of pregnancy even when the date of reception of the sperm is known, as several days may elapse before actual conception. The development of the child, furthermore, is no criterion. A period of less than 230 days is out of the question when the child shows the more important signs of maturity. He presents an array of data to sustain the view that the period preceding 302 days before birth might be accepted as the period of conception. The legally accepted limit for the period of conception in paternity litigation in Germany is now from the one hundred and eightieth to the three hundred and second day before birth.

Genital Tuberculosis in Women.—Kundrat analyzes the pathologic findings in sixty-six operative cases of tuberculosis of the female internal genital organs, and compares them with the literature.

Spontaneous Infection in Gynecology.—Salomon presents evidence of the occurrence of spontaneous endogenous infection in gynecologic cases. In some he here discusses in detail this was manifest in 11.1 per cent. Bacteria living in the vagina or cervix in a previously latent state, suddenly acquire virulence as the immunity balance is upset from any cause, and the defensive forces are no longer able to hold them in check. He adds that before any gynecologic operation which will be liable to upset the immunity balance, the vagina should be examined for virulent micro-organisms, the blood for their toxins, and the antibody titer determined. The physician must aim to exclude endogenous infection by rendering the bacteria in the vagina harmless, and artificially enhancing the immunity forces by an autovaccine made from the vaginal bacteria, and he must be the one to decide when the patient is ready for the operation.

Archiv für Kinderheilkunde, Stuttgart

May 21, 1921, **69**, No. 5

*Fate of Children with Congenital Syphilis. C. Husten.—p. 319.
Rare Malformation of Heart. A. Gödel.—p. 337.
*Prognosis of Acute Poliomyelitis. F. Wahler.—p. 343.
Febrile Reaction to Vaccination. F. Weil.—p. 351.
*Rachitic Dwarf Growth. P. Gerstl.—p. 357.
*Enlarged Heart as Child Body Grows. F. M. Groedel.—p. 365.
Abdominal Pains in Children. A. Peiper.—p. 378. Cont'd.

Fate of Children with Congenital Syphilis.—Husten emphasizes the necessity for enforcing compulsory treatment of children with congenital syphilis. In his experience at Freiburg with thirty-nine cases in the five years ending 1918, half the children soon died from intercurrent disease, and only sixteen are known to be living now. A third died of those given partial treatment, but only one of those given thorough courses. Of the fourteen still living and reexamined personally, 50 per cent. are imbeciles or idiots. Most of these children with congenital syphilis had been brought to the clinic on account of some casual infection, and it proved impossible to convince the parents of the necessity for persevering treatment of the syphilis. He endorses the bill now pending in the legislature which makes notification compulsory for all children born with congenital syphilis, and also makes treatment of venereal diseases compulsory and gratis. This would of course include infants with congenital syphilis as well as adults.

Prognosis of Acute Poliomyelitis.—Wahler says that unless a tendency to improvement is evident by the time the child is dismissed from the hospital, there is not much hope of improvement later. No benefit was apparent in such cases even after months of orthopedic and surgical measures, and no improvement has been found in those examined from two to six years later. On the other hand, those that displayed the slightest change for the better at the close of the acute stage have gone on improving since. The dispensary and orthopedic treatment applied for months may have contributed to this, or have been the decisive factor.

Rachitic Dwarf Growth.—The prematurely born child died when a year old, weighing only 2,780 gm. and measuring 49 cm. The stunting of the growth was probably traceable to the rachitis, supplemented by digestive disturbances and splenomegaly of the Gaucher type, the latter running an acute course.

The Heart in the Growing Body.—Groedel has found what he calls the heart quotient—the ratio between the width of the heart and the width of the lungs at the base—very instructive in clinical cases. The width of the lungs at the base is usually proportional to all those factors which might have a physiologic influence on the diameter of the heart. This quotient is usually 1:1.9 in both children and adults. He discusses here what happens as the child grows when its heart is primarily hypertrophied. The heart quotient may gradually approximate normal, as the child becomes a youth, or the pathologic proportions may be maintained. He cites an example of each type.

Beiträge zur klinischen Chirurgie, Tübingen

1921, **121**, No. 3

*Suppuration in the Knee. A. Läwen.—p. 479.
*Wounds of the Brain. F. Demmer.—p. 491.
Physiology of Concussion of the Brain. Breslauer-Schück.—p. 590.
The Mechanism of Concussion of the Brain. H. Rahm.—p. 593.
Mechanism of Bursting of the Intestine. W. Schönleber.—p. 597.
Operative Treatment of Diverticulum of the Esophagus. H. Lüpke.—p. 612.
Actinomycosis of the Salivary Glands. E. Schwarz.—p. 629.

*Results of Operations for Cancer. E. Brattström.—p. 636.
*Mammary Cancer. W. Boss.—p. 642.
Luxation of the Clavicle. W. Boss.—p. 679.
Fracture of the Patella. F. von der Hütten.—p. 687.
Traumatic Destructive Focus in the Scaphoid Bone. F. von der Hütten. —p. 704.
Histology of Plastic Induration in the Penis. O. Wiedhopf.—p. 712.

Suppuration in the Knee.—Läwen describes five cases showing the fine results that can be obtained with severe suppuration in the knee, rebellious to ordinary measures, when the joint is opened by an incision from the side with horizontal resection of the posterior condyle of the femur. The article is illustrated.

Wounds of the Brain.—Demmer reports from Hochenegg's service the ultimate outcome in 255 cases of injuries of the skull 1910-1914 and of fifty-two gunshot wounds of the skull, in addition to a large number of war cases and of concussion of the brain. All this material confirms the great importance of lumbar puncture as an aid in diagnosis and in relief of pressure on the brain, particularly with concussion of the brain. With an actual wound of the brain, the results have been far better since the practice has been adopted of enlarging the opening in the skull to have the diameter of the cavity the same at all depths. This cavity is then packed with a moist, incompressible tampon of the Mikulicz type. This is covered with a firm bandage and the brain is drained by repeated lumbar puncture. The article is illustrated and the fine results emphasized. The present condition in fourteen of these thirty-four tampon cases three years later shows that all have had their earning capacity restored and their symptoms have subsided completely or very nearly so. No attempt at a plastic operation has been made yet and the defect has completely healed. Some wear a protecting pad and except for occasional slight headache, dizziness and tinnitus all seem to be in good condition; three have slight impairment of the memory and one in concentrating his attention. Some other patients have not been heard from but the results in all from whom reports have been received are most gratifying, and confirm the value of this tampon-lumbar puncture treatment.

Results of Operations for Cancer.—Brattström gives the ultimate outcome in 210 cases of mammary cancer given operative treatment between 1905 and 1915; sixty-three have been cured. In five cases a primary tumor was found in other organs at the time or soon after. For the last two years roentgen exposures have been systematically given after the operation.

Prognosis of Mammary Cancer.—Boss obtained the best results with operative measures in the cancers of the scirrhus type, while the medullary cancers proved more malignant. Only two have been free from recurrence of the eight medullary cancers given systematic roentgen exposures after mammectomy.

Deutsche medizinische Wochenschrift, Berlin

May 26, 1921, **47**, No. 21

Appendicitis. H. Kümmel.—p. 581. Cont'd.
Transplants to Bridge Nerve Defects. Cassirer and Unger.—p. 586.
*Skin Tube to Close Artificial Anus. E. Unger and E. Schwabe.—p. 587.
*Treatment of Perforating Ulcer of Foot. L. Kleinschmidt.—p. 588.
Idem. E. Nordmann.—p. 588.
Phagedenic Suppuration of Lymph Glands in Groin. G. Wolff.—p. 589.
Prostheses for Short and Pathologic Stumps of the Leg. M. Böhm.—p. 589.
Recording of Angiospasms. Hinselmann and Haupt.—p. 590.
Cadaver Position of the Vocal Cords. J. Fein.—p. 591.
Parasyphilis. L. Arzt and W. Kerl.—p. 592.
Abortive Treatment of Syphilis. Blanck.—p. 592.
Quaker Food Distribution and Rohrer's Index. Bokofzer.—p. 593.
Studies on Infantile Gonorrhea. I. E. Valentin.—p. 594.
Eye Injuries Resulting from Skiing. J. Strebel.—p. 595.
Modern Cancer Treatment. O. Strauss.—p. 597.
Vomiting and Obstipation in Children. L. Langstein.—p. 599.

Skin Tube to Shut Off Artificial Anus.—Unger and Schwabe applied the technic that has been devised for cinematization of amputation stumps, making a tube out of a bridge of skin rolled up and sutured to form the tube, the ends still attached. The middle of the tube was drawn through under the colon and out through the skin, and sutured to the opening in the skin beyond the colon. The outer wall at this elbow was cut across, and a rod was inserted in each leg of the skin tube. A pad was worn which pressed the colon against these rods, thus closing the lumen of the intestine. They have applied variations of this method in three cases and it seems feasible, they say. Two illustrations show the technic.

Treatment of Trophoneurotic Ulcer of the Foot.—Kleinschmidt reports surprising success with roentgen-ray treatment in two cases of rebellious perforating ulcer of the foot in syphilitics, one with tabes. The lesions healed completely after a single full dose in one and in the other after two full doses. E. Nordmann reports an operative case of recurring trophoneurotic ulceration of the foot after a war wound of the sciatic nerve with paralysis of the leg. He exposed the saphenous nerve and the saphenous vein down to the ball of the big toe, where they were divided and shifted to a tunnel made for them in the soft parts median from the ulcer. In three months the ulcer had healed completely, and the skin of the foot now looks more natural. O. Nordmann had previously reported a case of rebellious perforating ulcer of the foot, after injury of the tibial nerve, in which complete cure followed the shifting of the external popliteal nerve.

Münchener medizinische Wochenschrift, Munich

May 20, 1921, **68**, No. 20

Steinach's Rejuvenation Hypothesis. B. Romeis.—p. 600.
Lymph Gland Ferments and the Wassermann Reaction. W. Gennerich. —p. 603.
Concentration of Roentgen Rays. Taeckel and Sippel.—p. 604.
Active Immunization Against Syphilis. R. Hilgermann and W. Krantz. —p. 605.
Meniscus Injuries. W. Schaedel.—p. 607.
Operation in Contracted Bladder. H. Flörcken.—p. 611.
Clinical Aspects of Spinal Tumors. E. W. Taschenberg.—p. 612.
Typical Pathologic Condition of the Second Metatarsophalangeal Joint. Unger.—p. 614.
Isolated Laceration of Iliac Artery from Contusion. J. Dubs.—p. 614.
Table for Roentgenologic Services. O. Hahn.—p. 615.
Treatment of Puerperal Mastitis. A. Krecke.—p. 617.

Wiener klinische Wochenschrift, Vienna

May 19, 1921, **34**, No. 20

D'Herelle's Bacteriophagum Intestinale Considered from the Standpoint of Typhus. O. Bail.—p. 237.
Pseudoleukemia. N. Jagic.—p. 238.
Pathology of Electric Current "Burns." S. Jellinek.—p. 239.
Invagination of Meckel Diverticulum. F. Depisch.—p. 240.
*Phototherapy in Rachitis. P. Erlacher.—p. 241.
Arteriosclerosis. F. Weinfurter.—p. 242.

Phototherapy in Rachitis.—Erlacher reports the results of the Hanau method of quartz lamp treatment in forty-six cases of rachitis. The patients ranged from 1 to 7 years of age. Every month comparative roentgenograms of the epiphyses of the right forearm were made. In all cases that could be thus controlled there was an undoubted improvement in the clinical picture; in most cases a complete cure was effected. At first the treatment was applied every second day but of late he has given daily treatments. He begins with five minutes each to the abdomen and back at one sitting. The time is lengthened by two minutes at each sitting until fifteen minutes each is reached. No ill effects of the treatment were noted. No changes in diet were ordered and no medication was employed. The number of sittings was usually from forty to sixty. The roentgenograms established the fact that the bones were becoming harder and firmer. The initial softness of the bones should, of course, be taken advantage of to straighten curvatures and correct deformities, while irradiation is continued, so that when the bones become firm they may be in the corrected position.

Zeitschrift für klinische Medizin, Berlin

1920, **89**, No. 5-6

*Peptone Test of Gallbladder Function. W. Stepp.—p. 313.
*Derangement of Heart Impulse. Rehfisch.—p. 345.
*Bone Disease of Central Nervous Origin. S. Robinski.—p. 361.
Effect of Military Service on Blood of Indoor Workers. A. Rothacker. —p. 387.
Typhoid and Five-Day Fever in Army Corps. H. Dembowski.—p. 410.

Peptone Test of Gallbladder Functioning.—Stepp confirms that the contents of the duodenum during periods of fasting contain little if any bile from the resting gallbladder. He starts up the flow of bile by injecting through the duodenal tube 30 c.c. of a 5 or 10 per cent. solution of peptone. The gallbladder is stimulated by this, and bile always poured into the duodenum in his experiments on fasting healthy

people. The dark colored bile was free from leukocytes. With disease of the gallbladder there is no reaction of this kind to the peptone, or if it occurs the bile thus derived contains more or less other pathologic elements. With mechanical obstruction, no bile can be obtained in this way. In three patients whose gallbladder had been removed, this test brought a partial response, confirming that the bile ducts may enlarge to serve as reservoirs for bile.

Derangement in Conduction of Heart Impulse.—Rehfisch discusses the mechanism for certain changes in the electrocardiogram and their significance. In a case described with bradycardia from partial heart block, a peculiar arrhythmia developed, a *doppelsinn des intervalls.*

Bone and Joint Disease in Disease of Central Nervous System—Robinski analyzes the bone and joint processes liable to develop in tabes and syringomyelia, commenting on the resemblance between the processes in the two. However, tabetic disturbances occur more frequently in legs than in arms, while with syringomyelia the arms are usually involved, and the patients are almost exclusively men, and the process is generally restricted to a single side. His findings confirm that fractures do not occur spontaneously in long bones unless the bone is already pathologic. In estimating fractures in connection with industrial accidents, he warns that the physician's task is to record his objective judgment. He is not to plead the cause of the injured. The study of bone and joint affections and of spontaneous fractures in internal disease is extremely important for our estimation of industrial or other accidents, as he explains in detail, with seventy bibliographic title references.

Zeitschrift für Tuberkulose, Berlin

May, 1921, **34**, No. 3-4

*Organized Campaign Against Tuberculosis. F. Helm.—p. 161.
*Pathologic Anatomy of Pulmonary Tuberculosis. S. Gräff.—p. 174.
*The Leukocytes in Pulmonary Tuberculosis. E. Romberg.—p. 191.
Droplets in Spread of Tuberculosis. C. Flügge.—p. 212.
Increase in Tuberculosis During War. M. Kirchner.—p. 228.
Tuberculosis in Bavaria. K. E. Ranke.—p. 272.
China-Workers and Tuberculosis. Thiele.—p. 303.
*Immunity to Tuberculosis. F. Neufeld.—p. 312.
*Conservative Treatment of Surgical Tuberculosis. A. Bier.—p. 329.
*Surgery in Pulmonary Tuberculosis. F. Sauerbruch and A. Brunner. p. 335.
Destruction of Tubercle Bacilli in Sputum. P. Uhlenhuth and E. Hailer.—p. 340.

Silver Anniversary of Organized Campaign Against Tuberculosis.—This number of 184 pages is a special issue in honor of the twenty-fifth anniversary of the organization of the German Zentralkomitee zur Bekämpfung der Tuberkulose. Helm reviews the work accomplished in this quarter century: By 1914 Germany had 158 sanatoriums for adults and thirty-two for children with tuberculosis; 120 institutions for children threatened with tuberculosis; twenty-three for children with bone and joint tuberculosis, and 135 daytime sanitariums and 18 schools in the woods. The death rate from tuberculosis declined during the twenty-five years from 24.9 per ten thousand to 13.87.

The Roentgen Rays and Pulmonary Tuberculosis.—Gräff took roentgenograms not long before death and made sections of the cadaver in the frontal plane, and compared the findings with the roentgenograms. This research covering four years and on 100 cadavers enabled the cause of every slightest shadow in the roentgenogram to be located and explained, as also the roentgen findings accompanying different lesions. Among the practical conclusions from the work is that localization of lesions by lobes is misleading, as the lobes vary in outline and overlap to such an extent. The clinical and roentgen findings distinguish between the processes with exudation and those with proliferation of tissue, the outlines of the latter being much more distinct. With blood-borne, disseminated tuberculosis and also inhalation tuberculosis the foci grow smaller peripherad. He never found an exception to this rule. The bronchogenous processes spread in the same way, but more along the front and side walls of the chest. This is particularly evident with the exudative type of process. This identity of the location of the air-borne and of the blood-borne infection shows that the mode of infection does not decide the localization of the process. This is determined by functional conditions.

Clinical Signs with Various Types of Pulmonary Tuberculosis.—Romberg classifies chronic pulmonary tuberculosis as the exudative, the proliferative and the cirrhotic types. The exudative includes the bronchopneumonic and the pneumonic forms, and this requires different treatment from the other types and has a different prognosis, and can be clinically distinguished from them. He discusses the local and general reaction and the differential leukocyte count with each type, saying that by this means we can trace the evolution of the disease. His charts of the leukocyte reaction show high leukocytosis in the second, third and early fourth stages, as also displacement to the left, but no lymphocytosis, and no eosinophilia after the first two stages.

Immunity to Tuberculosis.—Neufeld reviews the history of conceptions in regard to this, especially Römer's success in passive transmission of immunity. This confirms that the immunity is due to specific reaction products, and not to the presence of a tuberculous focus, as some assert. Römer's work was done on sheep, and there seems to be much to sustain the view that the immunity is due to sessile antibodies, only a small proportion being found in the blood. Neufeld urges further research in this line with homologous serum on animals that we know acquire immunity with relative facility.

Conservative Treatment of So-Called Surgical Tuberculosis.—Bier relates that he has found heliotherapy by far the most potent means at our command for treatment of tuberculous processes in bones, joints, glands, tendons and skin, and, possibly, of kidneys and testicles, but it must be applied properly to be effectual. He remarks, "The apparently simple things—to which category sunlight treatment undoubtedly belongs—are the very ones that are usually done wrong." He agrees with Finsen that the therapeutic effect is connected with an inflammatory reaction in the disease focus. Rollier, on the other hand, ascribes the efficacy to the pigmentation transforming the short light waves into long waves. Bier accepts that the action of the rays on the tissues destroys protein, and the action from the protein products is what induces the focal and the general reaction. "The sunlight rouses the appetite, promotes assimilation, induces sound sleep, in short, the effect is like that from transfusion of blood, which we know is exclusively a protein body action. We must be on our guard not to allow too strong a reaction in either case." He adds that he has remained true to stasis hyperemia as a valuable adjuvant in treatment of tuberculous processes. A third important measure is internal administration of iodin. He gives adults 3.25 gm. of sodium iodid daily. "Conservative treatment has proved its efficacy even for the aged. Deep cold abscesses subside spontaneously; the superficial are punctured and emptied, repeating if necessary but never injecting iodoform or other chemical. Large tuberculous sequesters do not call for operative intervention as they are regularly resorbed; only rarely are they expelled. Extracapsular foci in the bone near a joint heal under conservative measures without danger for the joint. The iodin and the stasis hyperemia aid in the resorption of the sequester, which can be followed with the roentgen rays. Operative measures should of course be considered in cases rebellious to the conservative; but it is not always the most advanced and extensive cases that prove refractory. The rebellious cases are usually fungous growths in the capsule, hard glands, and nodular lupus."

One great argument against surgical treatment is that the focus we have in view is not always the only focus, while heliotherapy acts on all at once. Bier adds in conclusion that the idea that a tuberculous bone or joint process must be immobilized, for it to heal, seems almost ineradicable in medical circles. In reality, all that is necessary is to relieve it of weight bearing, and keep this up for three months after complete healing. Laryngeal tuberculosis may also prove amenable to heliotherapy plus stasis hyperemia and iodin internally. Complicating pulmonary tuberculosis heals with the rest, but the primary is more refractory, possibly, he adds, because the technic has not yet been perfected. (The sanatorium, Hohenlychen, where he has accomplished results

that compare favorably with Rollier's in the Swiss mountains, is near Berlin. It has only 250 beds, but an arrangement has been made recently for a day-time sanatorium nearer Berlin, with places for 400, the patients going home at night.)

Surgical Treatment of Pulmonary Tuberculosis. — Sauerbruch and Brunner regard as one of the main advantages of this that persons who are sowing tubercle bacilli broadcast, can be rendered harmless for others by surgical measures. When this cannot be accomplished with an artificial pneumothorax, they resect from the first to the eleventh rib, close to the spine, cutting out under the periosteum from 4 to 8 cm. of the ribs at two or more sittings. They report 26 per cent. with no further expectoration or manifest tubercle bacilli among their fifty-seven patients given this treatment in the last nearly three years; 42 per cent. were merely improved. No benefit was realized in 25 per cent. These figures approximate those in a previous series of 381 cases published, with 35 per cent. cured and 40 per cent. improved. They declare that no patient should be allowed to go year after year scattering bacilli from a rebellious unilateral process when he can be readily transferred to the closed category by this means. A climatic course of aftertreatment is advisable, it being distinctly emphasized that this operative measure does not cure, but merely provides better conditions for a spontaneous cure.

Zentralblatt für Chirurgie, Leipzig

May 21, 1921, **48**, No. 20

Treatment of Osteomyelitic Bone Cavities by the Payr Method. A. Hedri.—p. 698.
Is Ethyl Chlorid Anesthesia Entirely Innocuous? Hartleib.—p. 702.
Stab Injury of Left Pulmonary Vein. A. Hofmann.—p. 704.
*Treatment of Prolapse of Rectum in Children. Plenz.—p. 706.
Contrast Mediums for Pyelography. E. Joseph.—p. 707.
Enucleation of a Fist-Sized Perithelioma from the Head of the Pancreas. E. Pólya.—p. 708.
Technic of Albee Operation in Tuberculous Spondylitis. J. Hass.—p. 709.

Treatment of Prolapse of Rectum in Children. — Plenz opposes the opinion advanced by many physicians that in children prolapse of the rectum should be given ample chance to heal spontaneously. Children with prolapse of the rectum look forward with dread to every evacuation of the intestine, for which reason they endeavor to postpone a movement, and the metabolism and the general condition of the whole organism are very much disturbed by this enforced constipation. These facts alone furnish sufficient grounds for operative intervention, but when one sees how the children suffer during defecation he thinks that operation becomes imperative in order to relieve them of their suffering. He does not approve of Thiersch's wire ring as it nearly always induces suppuration and causes considerable trouble during defecation. Other operations are of too radical a nature, and adhesive plaster strapping is unsanitary and often requires treatment extending over many weeks. He therefore approves the use of a fascia ring to encircle the anus. The advantages of the method are that elastic, autogenous material is employed which fits the requirements; the operation is short and not at all dangerous, and convalescence extends over ten days at the most. Plenz has operated now on thirteen children and with durable success in all. He takes a strip of fascia from the thigh, from 12 to 15 cm. long by 1.5 cm. wide, and passes it around the anus in a subcutaneous tunnel burrowed for it. The ends are fastened by passing one end through a slit in the other end, and then spreading the ends out and suturing the edges to the edge of the strip. He makes the two incisions on the raphe in boys, and to the side of the anus in girls. This answers all the purposes of the wire ring without its drawbacks.

Zentralblatt für Gynäkologie, Leipzig

May 21, 1921, **45**, No. 20

The Fourth Maneuver (Leopold's Classification) in Obstetric Examination. H. Fuchs.—p. 694.
Cesarean Section on Account of Fever. W. Koerting.—p. 697.
*Agenesis of Both Kidneys in Fetus. O. Hürzeler.—p. 702.
Congenital Aplasia of the Cutis. E. Graff.—p. 705.
Congenital Atresia of the Ileum. E. Levy.—p. 707.
Methods of Skin Suture. E. Opitz.—p. 709.

Agenesia of Both Kidneys in Fetus, with Absence of Amniotic Fluid.—Hürzeler reports the case of a child who died twenty minutes after birth, in whom both kidneys were lacking but in place of which bilaterally a formation the size of a hemp-seed was found, resembling a lymph gland. As the amniotic fluid was also lacking, the case raises the question whether the fetal kidneys play a part in connection with the origin of the amniotic fluid, as is believed by some.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 7, 1921, **1**, No. 19

*Shortening of Leg with Hip-Joint Disease. H. Timmer.—p. 2507.
*Inherited Diabetes Insipidus. E. Janzen and J. Broekman.—p. 2519.
Nonmalignant Stenosis of Small Intestine. A. E. Sitsen.—p. 2532.
Shooting at Smugglers. L. Janknecht.—p. 2533.
History of Medical Service in Dutch East India Company. J. Haver Droeze.—p. 2535.
*Medical Subjects in Art. J. B. F. van Gils.—p. 2561.
A Seventeenth Century Medical Journal. E. D. Baumann.—p. 2563.
Tuberculosis Death Rate Before and Since the War. B. H. Sajet.—p. 2606.

Shortening with Hip-Joint Disease.—Timmer discusses the estimation of the shortening from the standpoint of the orthopedic surgeon. He measures the limb reclining, and as the subject stands, with books placed under the foot, to bring the pelvis level. The measurements differ in abduction and adduction, and the kind and degree of shortening aid in the differential diagnosis.

Hereditary Diabetes Insipidus.—Janzen and Broekman describe a case and family in which fourteen cases were known in this or preceding generations. Their case confirms the peculiar intensity of this hereditary form, its regular persistence from birth till death, and the fact that the general health does not seem to suffer. In the present case the disease appeared in four of five generations, apparently skipping the second. In one generation only one of twelve children had it, but in another, half of the children. In all there were four males and ten females affected, but in the seven other families that have been published there were fifty-seven males to twenty-two females. In one family, diabetes insipidus alternated with diabetes mellitus.

Medical Subjects in Art.—Jan Steen's works are discussed, and the significance of the chafing dish, with flame, always occupying a prominent position in his pictures of physicians' visits (A. D. 1590).

Hygiea, Stockholm

May 16, 1921, **83**, No. 9

*Factors Predisposing to Tuberculosis. H. Lundborg.—p. 289.
Care of Mental Disease at Stockholm. V. Wigert.—p. 301.

Factors Predisposing to Tuberculosis.—Among these factors Lundborg ranks admixture of races, universal asthenia, substandard constitution, and unusual height, the latter especially in mixed races. The average height of 1,000 tuberculous men examined in Sweden was 175 cm. while the corresponding figure in the nontuberculous was 170 cm.

Ugeskrift for Læger, Copenhagen

June 2, 1921, **83**, No. 22

*Results of Pneumothorax Treatment. S. M. Saxtorph.—p. 711.
*Registration of Syphilitics. O. Jersild.—p. 718.

Results of Pneumothorax Treatment.—This communication from a sanatorium receiving women and almost exclusively those of the wage-earning classes, analyzes the outcome in 200 cases of pulmonary tuberculosis in which attempts were made to induce therapeutic pneumothorax in the ten years ending with 1919. Only 48 of the total are still living. An effectual pneumothorax was realized in 108 cases, and two years later 47 of these were still living. Of the total number, 33 per cent. are living in good health from two to six years afterward with full earning capacity restored. These experiences are regarded as very encouraging to continue the pneumothorax treatment in suitable cases. Only 3 are still living of the 34 in whom only partial compression of the lung could be induced. The outlook is more favorable in the afebrile cases.

Registration of Syphilitics.—Summarized in the news columns, July 23.